PLEASE RETURN

RENEWABLE RESOURCE and WATER DEVELOPMENT PROGRAMS

Project Evaluations and Recommendations for 1986-1987 Biennium

and

1984-1985 Biennium Status Report

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
JANUARY 1985

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CHAPTER 1

The Water Development Program - Loans and Grants Under $200,000

A. Program Description and History

The Water Development Program was established in 1981 by the Montana Legislature to promote and advance the beneficial use of water and to allow the citizens of Montana to achieve full use of the state's water by providing grant and loan financing for water development projects and activities. Projects and activities must be water related and may be for feasibility work, demonstration projects, or construction projects. Eligible proposals include hydropower development, construction or rehabilitation of irrigation projects, dam or reservoir construction, control programs for saline seep, development of water-based recreation facilities, streambank stabilization and other erosion control programs, development of water supply, water treatment, or rural water systems, and development of gravity sprinkler systems for irrigation. Public entities and private individuals, partnerships and corporations are eligible to apply.

B. Program Funding

The funding source for the water development grant program is the coal severance tax. The program receives .625 percent of the gross proceeds of the tax each biennium. These funds are disbursed as they are received to approved projects based on their priority ranking. Loans for water development are available to projects with repayment capacity from the proceeds of Montana Water Development General Obligation Bonds. The 1981 Legislature authorized the state to issue up to $5 million in general obligation bonds to fund the loan program. Loans are offered at the interest rate at which the state bond is sold.

C. Program Administration and Project Review Procedures

The Water Development Bureau of the Water Resources Division in the Department of Natural Resources and Conservation administers the water development program. The DNRC develops the application form and solicits proposals from the agricultural community, local governments, irrigation and conservation districts, state government and the university system. Applications are submitted to the DNRC in the even-numbered years prior to the legislative session. Each proposal must include information to enable technical, economic, financial and environmental assessments. The Department evaluates the proposals and solicits technical and financial review assistance when appropriate. Following the assessment review, feasible projects and activities are ranked by the Department using established program and financial need criteria (Table 1). A funding priority and funding amount recommendation is then prepared for consideration by the Water Development Advisory Council appointed each biennium by the Governor in accordance with Section 2-15-22, MCA. After the Council's review, the Department makes a recommendation to the governor, who in turn makes the final recommendation to the legislature. Legislative approval is required for all grants and all loans to public entities. When the legislature passes an appropriation bill for the program, Department staff begin to work with project sponsors on implementation and a contract is entered into between the project sponsor and the Department. Each contract includes a detailed scope of work with a completion schedule and budget. Disbursal of funds is made according to availability and the project schedule. Sponsors are required to submit quarterly

and final project reports which are used along with field visits to monitor project progress and completion. Loan sponsors are required to submit annual financial reports on the funded system during the life of the loan.

Loans to private individuals, partnerships and corporations may be approved by the Department Director and application may be made throughout the biennium. Applicants are provided application forms, and proposals are reviewed for technical and financial feasibility. Availability of funds for approved projects is contingent on the availability of state bond proceeds. The Department is planning a state bond sale each year to make funds for private loans available on an annual basis. A $900,000 Water Development General Obligation Bond was sold in October 1984 to finance private agricultural projects. The 10-year bond was sold at an interest rate of 8.71 percent. Funds for private loans were also included in the $1.3 million Water Development General Obligation Bond issued in October 1983 to fund projects approved by the legislature.

D. Project Ranking and Funding Recommendation Procedures

Since there are more projects than funds, the Department ranks feasible projects in order to develop a funding priority and funding level to recommend to the legislature. These priorities reflect the specific goals required by law for the use of water development funds. These goals are:

1) optimize public benefits and multiple use
2) fully utilize water and promote conservation and efficient use of the resource
3) need and urgency for the project
4) are part of a family farm operation
5) use reserved water
6) are water storage projects

The Board of Natural Resources and Conservation and the Water Development Advisory Council have adopted several other goals for the ranking system, primarily to make the water development and renewable resource programs compatible. These goals are:

1) enhance public resources
2) has minimal environmental impact
3) has potential for statewide application
4) has not previously received funds
5) does not take prime agricultural land out of production

Funding priority is determined by how well a project scores under these 11 criteria. A proposal can receive up to ten points for each goal with a maximum program score of 110. For each goal, specific criteria are identified so that there is consistency in the assignment of points under each goal.

Once the priority of projects is established there is a recommended grant amount developed for each project as follows:

1) Construction projects with repayment capacity, such as a community water or sewer project, received up to 25 percent of their total project cost as a grant depending to a large degree on how well they scored on the first five of the eleven criteria listed above. These five criteria reflect the provision of public benefits for which it was considered appropriate to use grant funds. In addition, some consideration was given to the financial capability of the project sponsor, which

was typically a small community. This was done to give credit to an entity which had taken on a heavy debt burden to solve its problems. The maximum project cost or request considered for a grant was $200,000. Larger requests were recommended for funding from the coal severance tax loan program.

2) Projects with no repayment capacity were recommended for 50 percent to 100 percent funding depending on how well they scored on the first five ranking criteria--again on the degree to which they are providing public benefits.

3) No project was recommended to receive more than a $100,000 grant because of extreme competition for these funds.

Once the funding level was established consideration was given to the viability of the project. If the recommended grant was less than the request, the remainder was provided with a loan recommendation. If a project's priority was such that it would not receive a grant, the project sponsor can take the recommended grant amount as a loan instead.

E. FY 1986-1987 Grant and Loan Projects

Seventy-six applications for water projects and activities were received and ranked for funding consideration during the FY 1986-87 Biennium. The full range of eligible applicants participated: private individuals, irrigation districts, conservation districts, rural water and sewer districts, local governments, and state government and university applicants. Water and sewer system construction or rehabilitation was by far the dominant project type requested followed by irrigation system projects. The growing concern about surface and groundwater quality was reflected in the seven groundwater monitoring proposals and eight streambank stabilization projects submitted for funding. Although the Department has sufficient loan authority to meet the loan demand, grant requests far exceed funds available. Requests for grants totaled almost $9.5 million. Revenues are projected to be $1.7 million which includes the 40 percent renewable resource allocation for water projects as well as the coal tax revenues earmarked for the water development program.*

Tables 1 and 2 detail the priority ranking and funding recommendations for water development projects and activities. Following the tables are two groups of project summaries; one group describes all the applications received for grant funding; the second group are private loan requests. The private loan applications will be reviewed and approved or disapproved for funding by the Department Director. Approved projects will be funded during the fall of 1984 or spring of 1985 from proceeds of the $900,000 Montana Water Development General Obligation Bond issued in October 1984.

* This amount is based on budget projections and is subject to change. It should fund approximately the first 30 projects, allowing for an anticipated emergency fund and a reserve in the event of a revenue shortfall.

TABLE 1
WATER DEVELOPMENT AND RENEWABLE RESOURCE DEVELOPMENT PROGRAMS
WATER PROJECTS
RANKING ORDER AND SCORES

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATE-WIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
1. MONTANA BUREAU OF MINES & GEOLOGY Statewide Ground-Water Information Center	66	6	7	8	9	4	8	9	5	10	0	0
2. TRIANGLE CONSERVATION DISTRICT Triangle Saline Seep	66	6	7	9	9	5	8	2	10	10	0	0
3. CARBON CONSERVATION DISTRICT Willow Creek Stream Corridor Management	64	6	7	7	7	3	4	10	10	10	0	0
4. UNIVERSITY OF MONTANA--MONTANA FOREST & EXPERIMENT STATION/Riparian Vegetation System	64	6	8	8	9	4	7	7	5	10	0	0
5. ROSEBUD CONSERVATION DISTRICT Vegetative Streambank Stabilization	64	6	5	6	8	4	5	10	10	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
6. TETON COUNTY CONSERVATION DISTRICT Upper Teton Aquifer Study	64	8	8	7	9	5	3	7	7	10	0	0
7. MONTANA STATE UNIVERSITY Hydrological Assess of Pony and Cow Creeks	63	6	6	8	8	4	3	8	10	10	0	0
8. TOWN OF EKALAKA Water and Sewer Facilities Plan	61	6	6	5	8	6	4	10	5	10	0	1
9. LEWIS & CLARK/JEFF VALLEY CONSERVATION DISTRICT Prickley Pear Stream Stabilization	60	6	7	6	7	3	5	10	6	10	0	0
10. CUT BANK NORTH GLACIER WATER AND SEWER DISTRICT North Cut Bank Sewer System	60	5	5	9	9	8	2	10	2	10	0	0
11. SEELEY LAKE MISSOULA COUNTY WATER DISTRICT Development of Water and Sewer System Facilities Plan	60	7	6	8	8	7	4	10	0	9	0	1

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
12. UNIVERSITY OF MONTANA/Missoula Aquifer Study	59	6	6	8	9	6	5	7	2	10	0	0
13. STILLWATER CONSERVATION DISTRICT & BEARTOOTH RC&D Saline Seep Reclamation and Plowout	59	4	5	7	6	3	6	10	8	10	0	0
14. GREENFIELDS IRRIGATION DISTRICT Rehabilitation & Automation of Bifurcation Structure (new)	58	5	5	5	6	5	7	5	10	10	0	0
15. GREENFIELDS IRRIGATION DISTRICT Rehabilitation & Automation of Bifurcation Structure (old)	58	5	5	5	6	5	7	5	10	10	0	0
16. CARBON CONSERVATION DISTRICT Cottonwood Creek Stream Corridor Management	58	4	6	6	6	2	4	10	10	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
17. MONTANA STATE UNIVERSITY Impacts of Small Hydropower on Trout	57	5	6	8	8	4	6	7	3	10	0	0
18. ANTELOPE WATER/ SEWER DISTRICT Water Sewer System Construction	57	5	6	6	10	6	4	10	0	10	0	0
19. DANIELS COUNTY CONSERVATION DISTRICT/Poplar River Monitoring	56	5	4	8	8	5	2	7	7	10	0	0
20. TOWN OF CASCADE Landfill Rehabilitation and Park Development	55	6	5	8	7	7	2	10	0	10	0	0
21. SHERIDAN COUNTY Northeast Montana Groundwater Study	54	6	8	4	6	3	4	4	9	10	0	0
22. TREASURE COUNTY CONSERVATION DISTRICT/Irrigation System Reorganization	54	3	4	4	7	3	3	10	10	10	0	0
23. TOWN OF SACO Water Systems Improvement	53	6	3	5	9	4	2	10	1	10	0	3

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATE-WIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
24. PRIVATE WATER USERS ASSOCIATION Weed & Moss Catcher	52	4	5	3	5	3	2	10	10	10	0	0
25. BOX ELDER RURAL IMPROVEMENT DISTRICT/Well Development	52	3	4	4	7	4	0	10	10	10	0	0
26. SHERIDAN COUNTY-RESERVE SEWER DISTRICT/Reserve Sewer System	51	3	3	8	7	6	2	10	2	10	0	0
27. PRIVATE DITCH COMPANY/Gravity Irrigation System	51	2	4	3	7	3	2	10	10	10	0	0
28. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS/Gartside Dam Repair	50	6	5	4	6	5	0	7	2	10	0	5
29. BUTTE/SILVER BOW Sewer Sludge Application and Plant Trials	50	3	3	5	6	6	4	10	3	10	0	0
30. DEER LODGE VALLEY CONSERVATION DISTRICT/Gilman Wimberly Group Flood Protection	50	5	4	5	6	4	3	10	3	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
31. PRIVATE WATER SYSTEM ASSISTANCE CORPORATION Potable Water System Technical Advisor	49	3	3	4	8	3	8	8	2	10	0	0
32. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS/McNeil Slough Dam Restoration	49	5	4	2	5	1	0	10	2	10	0	10
33. FORT BELKNAP INDIAN COMMUNITY Groundwater Study	49	2	4	5	6	3	3	7	9	10	0	0
34. MONTANA BUREAU OF MINES AND GEOLOGY Madison Valley Arsenic Groundwater Study	49	3	4	6	6	4	4	7	5	10	0	0
35. PRIVATE WATER USERS ASSOCIATION Ditch Rehabilitation	49	4	3	4	3	5	0	10	10	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
36. MONTANA STATE UNIVERSITY Groundwater Exploration of Bozeman Fan	49	5	5	6	6	3	4	10	3	7	0	0
37. WHITEFISH WATER & SEWER DISTRICT Whitefish Lake Critical Area Study	49	6	6	7	8	5	4	3	0	10	0	0
38. MEAGHER COUNTY Newlan Creek Dam and Irrigation Feasibility	48	3	4	2	5	5	0	7	7	10	0	5
39. MONTANA STATE UNIVERSITY SOUTHERN AG RESEARCH CENTER Cablegation Demonstration	47	3	3	3	5	1	2	10	10	10	0	0
40. PRIVATE RURAL WATER CORPORATION Water System and Supply	46	3	2	3	6	2	0	10	10	10	0	0
41. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS/Streambank Preservation	46	4	3	6	6	2	7	3	5	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
42. TREASURE COUNTY CONSERVATION DISTRICT/Low Interest Loans for Underground Pipe Placement	46	2	3	3	4	3	1	10	10	10	0	0
43. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION CONSERVATION DISTRICTS DIVISION Riparian Management Program	46	2	2	5	5	2	5	10	5	10	0	0
44. CUSTER COUNTY Fairgrounds Sewer System	45	5	2	7	6	5	0	10	0	10	0	0
45. MONTANA STATE UNIVERSITY DEPARTMENT OF ENGINEERING Guidelines for Community Water Demands	44	2	3	3	6	2	8	10	0	10	0	0
46. GLEN LAKE IRRIGATION DISTRICT Therriault Creek Siphon Construction	44	2	3	4	6	4	2	3	10	10	0	0
47. COOKE CITY WATER USERS ASSOCIATION Water System Improvements	44	4	4	3	6	5	2	10	0	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
48. RED LODGE Park & Irrigation System Development	44	4	5	5	5	2	3	10	0	10	0	0
49. CITY OF BEIT Sewage System Lift Station	43	3	2	7	5	6	0	10	0	10	0	0
50. CITY OF POLSON South Polson Water Collection Project	43	3	4	5	7	3	1	10	0	10	0	0
51. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION CONSERVATION DISTRICTS DIVISION Streambank Reclamation	43	3	3	6	5	.	4	10	0	10	0	0
52. FAIRFIELD/Open Ditch Conversion	42	2	4	5	4	5	0	10	2	10	0	0
53. PONDERA CANAL AND RESERVOIR COMPANY Canal Dredging for Conrad Water Supply	41	2	2	4	7	6	0	10	0	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATE-WIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
54. MONTANA BUREAU OF MINES AND GEOLOGY Butte Mine Flooding Monitoring	41	4	3	6	6	7	2	3	0	10	0	0
55. TOWN OF DUTTON Municipal Water Supply Study	41	2	3	3	5	4	2	10	2	10	0	0
56. CITY OF PLENTYWOOD Water System Improvement Facility	40	4	4	3	6	1	2	10	0	10	0	0
57. EAST BENCH IRRIGATION DISTRICT Hydropower Development Feasibility Study	40	2	1	3	7	2	0	10	5	10	0	0
58. PRIVATE INDIVIDUAL Low Pressure Sprinkler System Installation	40	1	0	3	5	1	0	10	10	10	0	0
59. CITY OF HAMILTON Water System Renovation	39	3	3	4	5	5	0	9	0	10	0	0
60. CITY OF MILES CITY Park Irrigation System Conversion	39	2	2	3	8	4	0	10	0	10	0	0

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
61. CITY OF SHELBY Water Supply Development	39	3	4	3	3	4	2	10	0	10	0	0
62. CASCADE COUNTY RID #26/Water Line Replacement		3	3	4	5	3	0	10	1	9	0	0
63. CITY OF MILES CITY Upgrade Recreation Lake Boat Facilities	38	3	3	3	6	3	0	10	0	10	0	0
64. CITY OF CHOTEAU Water Supply Study		2	3	4	5	2	1	10	0	10	0	0
65. GOFF HILL WATER DISTRICT/Water Syster Improvements	36	3	2	[illegible]	5	3	1	[illegible]	0	9	0	0
66. TOWN OF SCOBEY Water System Improvements	36	3	3	3	5	2	0	[illegible]	0	10	0	0
67. GREENFIELDS IRRIGATION DISTRICT Hydropower Feasibility Study	36	1	1	2	5	2	0	10	5	10	0	0
68. TOWN OF KEVIN Water Storage Reservoir Repair	36	3	1	3	3	3	0	10	0	10	0	3

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREE OF ENVIRONMENTAL IMPACT	FULLY UTILIZES WATER &/OR PROMOTES CONSERVATION & EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS	PART OF A FAMILY FARM OPERATION	DOES NOT TAKE PRIME AGRICULTURAL LAND OUT OF PRODUCTION	USES RESERVED WATER	IS A WATER STORAGE PROJECT
69. TOWN OF WEST YELLOWSTONE Storm Sewer/Water System Study	36	2	4	3	3	3	1	10	0	10	0	0
70. PRIVATE PARTNERSHIP Small Hydropower Development	35	2	2	3	6	2	0	10	0	10	0	0
71. PRIVATE HOMEOWNERS ASSOCIATION/ New Well and Pump	35	1	3	3	4	5	0	10	0	9	0	0
72. CITY OF HELENA Sewage Treatment Plant Effluent Pipeline	34	1	2	3	2	1	0	10	5	10	0	0
73. SUN PRAIRIE ESTATES COUNTY WATER DISTRICT/Water System Improvements	34	2	3	3	4	4	0	10	0	8	0	0
74. MEAGHER COUNTY Golf Course Gravity Flow Irrigation System	31	4	3	3	3	3	0	10	0	5	0	0
75. CASCADE COUNTY Gibson Flats Flood Control Study	31	2	1	3	1	2	0	10	2	10	0	0
76. CITY OF HELENA Water System Storage Improvement	29	3	2	3	3	2	0	3	0	10	0	3

TABLE 2
WATER DEVELOPMENT AND RENEWABLE RESOURCE DEVELOPMENT PROGRAM
WATER PROJECTS
FUNDING REQUESTS AND RECOMMENDATIONS

APPLICANT/PROJECT	REQUEST	*RECOMMENDATION
1. MONTANA BUREAU OF MINES & GEOLOGY Statewide Groundwater Information Center	$131,800	$100,000
2. TRIANGLE CONSERVATION DISTRICT Triangle Saline Seep	807,790	100,000
3. CARBON CONSERVATION DISTRICT Willow Creek Stream Corridor Management	84,886	68,000
4. UNIVERSITY OF MONTANA--MONTANA FOREST AND EXPERIMENT STATION/Riparian Vegetation System	99,771	85,000
**5. ROSEBUD CONSERVATION DISTRICT Vegetative Streambank Stabilization	5,500	5,500
6. TETON COUNTY CONSERVATION DISTRICT Upper Teton Aquifer Study	155,470	100,000
7. MONTANA STATE UNIVERSITY Hydrological Assess of Pony and Cow Creeks	68,808	69,000
**8. TOWN OF EKALAKA Water and Sewer Facilities Plan	17,000	17,000
9. LEWIS & CLARK JEFF VALLEY CONSERVATION DISTRICT/Prickly Pear Stream Stabilization	173,866	100,000
10. CUT BANK NORTH GLACIER WATER AND SEWER DISTRICT North Cut Bank Sewer System	175,000	50,000 grant 125,000 loan
**11. SEELEY LAKE MISSOULA COUNTY WATER DISTRICT Development of Water and Sewer System Facilities Plan	9,000	9,000
12. UNIVERSITY OF MONTANA Missoula Aquifer Study	176,335	100,000
13. STILLWATER CONSERVATION DISTRICT & BEARTOOTH RC&D Saline Seep Reclamation and Flowout	94,912	80,000
14. GREENFIELDS IRRIGATION DISTRICT Rehabilitation & Automation of Bifurcation Structure (new)	49,244	17,000 grant 32,244 loan
**15. GREENFIELDS IRRIGATION DISTRICT Rehabilitation & Automation of Bifurcation Structure (old)	54,226	54,000
16. CARBON CONSERVATION DISTRICT Cottonwood Creek Water Corridor Management	27,068	20,000
17. MONTANA STATE UNIVERSITY Impacts of Small Hydropower on Trout	99,608	97,000
**18. ANTELOPE WATER SEWER DISTRICT Water Sewer System Construction	160,000	60,000 grant 100,000 loan
19. DANIELS COUNTY CONSERVATION DISTRICT Poplar River Monitoring	99,173	99,000
**20. TOWN OF CASCADE Landfill Rehabilitation and Park Development	100,000	44,000 grant 66,000 loan

APPLICANT/PROJECT	REQUEST		RECOMMENDATION
21. SHERIDAN COUNTY Northeast Montana Groundwater Study	100,000		75,000
22. TREASURE COUNTY CONSERVATION DISTRICT Irrigation System Reorganization	17,160		17,000
23. TOWN OF SACO Water Systems Improvement	200,000		41,800 grant 158,200 loan
24. PRIVATE WATER USERS ASSOCIATION Weed & Moss Catcher	120,000		20,000 grant 100,000 loan
**25. BOX ELDER RURAL IMPROVEMENT DISTRICT Well Development	100,000		28,000 grant 142,000 loan
26. SHERIDAN COUNTY--RESERVE SEWER DISTRICT Reserve Sewer System	150,000		33,000 grant 117,000 loan
**27. PRIVATE DITCH COMPANY Gravity Irrigation System	35,000		6,000 grant 29,000 loan
28. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Gartside Dam Repair	403,200		100,000
29. BUTTE/SILVER BOW Sewer Sludge Application and Plant Trials	88,981		82,000
30. DEER LODGE VALLEY CONSERVATION DISTRICT Gilman Wilberly Group Flood Protection	38,167	---$1,740,240 projected grant funds available for water projects----	15,000
**31. PRIVATE WATER SYSTEM ASSISTANCE CORPORATION Potable Water System Technical Advisor	100,000		16,700
32. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS McNeil Slough Dam Restoration	86,773		56,000
33. FORT BELKNAP INDIAN COMMUNITY Groundwater Study	73,280		57,000
34. MONTANA BUREAU OF MINES AND GEOLOGY Madison Valley Arsenic Groundwater Study	43,989		44,000
35. PRIVATE WATER USERS ASSOCIATION Ditch Rehabilitation	200,000		33,000 grant 167,000 loan
36. MONTANA STATE UNIVERSITY Groundwater Exploration of Bozeman Fan	113,817		85,000
37. WHITEFISH WATER & SEWER DISTRICT Whitefish Lake Critical Area Study	208,592		100,000
38. MEAGHER COUNTY/Newlan Creek Dam and Irrigation Feasibility	231,000		100,000
39. MONTANA STATE UNIVERSITY SOUTHERN AG RESEARCH CENTER/Cablegation Demonstration	31,000		10,000
**40. PRIVATE RURAL WATER CORPORATION/ Water System and Supply	88,000		88,000
41. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Streambank Preservation	50,000		35,000
42. TREASURE COUNTY CONSERVATION DISTRICT Low Interest Loans for Underground Pipe Placement	300,000		100,000
43. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--CONSERVATION DISTRICT DIVISION Riparian Management Program	95,000		66,500

APPLICANT/PROJECT	REQUEST	RECOMMENDATION
44. CUSTER COUNTY Fairgrounds Sewer System	117,380	25,000 grant 92,380 loan
45. MONTANA STATE UNIVERSITY DEPARTMENT OF ENGINEERING/Guidelines for Community Water Demands	31,700	25,000
46. GLEN LAKE IRRIGATION DISTRICT Therriault Creek Siphon Construction	155,000	32,000 grant 123,000 loan
47. COPPER CITY WATER USERS ASSOCIATION Water System Improvements	200,000	42,000 grant 158,000 loan
48. RED LODGE/Park & Irrigation System Development	100,000	100,000
49. CITY OF HILT Sewage System Lift Station	160,000	33,000 grant 127,000 loan
50. CITY OF POLSON South Polson Water Collection Project	200,000	42,000 grant 158,000 loan
51. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--CONSERVATION DISTRICTS DIVISION Streambank Reclamation	55,000	38,500
52. FAIRFIELD Open Ditch Conversion	115,000	80,500 grant 34,500 loan
53. PONDERA CANAL AND RESERVOIR COMPANY Canal Dredging for Conrad Water Supply	50,000	8,350 grant 41,650 loan
54. MONTANA BUREAU OF MINES AND GEOLOGY Butte Mine Flooding Monitoring	99,527	96,000
**55. TOWN OF DUTTON Municipal Water Supply Study	29,700	19,300
56. CITY OF PLENTYWOOD Water System Improvement Facility	53,400	37,000
57. EAST BENCH IRRIGATION DISTRICT Hydropower Development Feasibility Study	60,000	39,000
58. PRIVATE INDIVIDUAL Low Pressure Sprinkler System Installation	30,000	2,500 grant 27,500 loan
59. CITY OF FAIRFIELD Water System Renovation	49,068	24,500 grant 24,568 loan
60. CITY OF MILES CITY Park Irrigation System Conversion	5,562	3,800
61. CITY OF SHELBY Water Supply Development	81,625	25,000 grant 56,625 loan
62. CASCADE COUNTY RID #26 Water Line Replacement	200,000	33,000 grant 167,000 loan
63. CITY OF MILES CITY Upgrade Recreation Lake Boat Facilities	36,722	26,000
64. CITY OF CHOTEAU Water Supply Study	34,400	0
65. CORE HILL WATER DISTRICT Water System Improvements	162,000	27,000 grant 135,000 loan

APPLICANT/PROJECT	REQUEST	RECOMMENDATION
66. TOWN OF SCOBEY Water System Improvements	8,990	5,000 grant 3,990 loan
67. GREENFIELDS IRRIGATION DISTRICT Hydropower Feasibility Study	28,000	28,000
68. TOWN OF KEVIN Water Storage Reservoir Repair	200,000	25,000 grant 175,000 loan
69. TOWN OF WEST YELLOWSTONE Storm Sewer Water System Study	32,000	21,000
70. PRIVATE PARTNERSHIP Small Hydropower Development	160,000	22,000 grant 138,000 loan
71. PRIVATE HOMEOWNERS ASSOCIATION New Well and Pump	19,550	3,400 grant 16,000 loan
72. CITY OF HELENA Sewage Treatment Plant Effluent Pipeline	154,525	21,000 grant 133,525 loan
73. SUN PRAIRIE ESTATES COUNTY WATER DISTRICT Water System Improvements	121,000	20,000 grant 101,000 loan
74. MEAGHER COUNTY Golf Course Gravity Flow Irrigation System	144,130	94,000
75. CASCADE COUNTY Gibson Flats Flood Control Study	22,600	0
76. CITY OF HELENA Water System Storage Improvement	102,310	17,000 grant 85,310 loan

* All recommendations are for grants, except where designated as loans.

** Reapplications were permitted for projects that were approved for funding by the 1983 Legislature but did not receive any or all of the grant funds because of reductions in coal tax revenues. The recommendations do not exceed the previously approved grant amounts.

APPLICANT NAME: Montana Bureau of Mines and Geology

PROJECT/ACTIVITY NAME: Statewide Groundwater Information Center

AMOUNT REQUESTED: $131,800 Grant

TOTAL PROJECT COST: $204,120

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The Montana Bureau of Mines and Geology proposes to develop a statewide Groundwater Information Center to organize the Montana groundwater data base and to increase the accessibility of the groundwater data for those who need them. This will be accomplished through the purchase of computer hardware for information storage, and software for producing reports and graphic presentation of data. A data base technician will be hired to maintain and edit the data.

Existing Montana Bureau of Mines and Geology computer systems do not have the storage capability necessary for establishing a thorough groundwater data base, nor the capability of easy access and retrieval. The Governor's Advisory Council on Groundwater has identified the clearinghouse service this proposed information center could provide as the greatest single need in groundwater research in Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

The selected alternative of establishing a computerized statewide groundwater information data base system is appropriate and needed.

The data base will be made available to any user. Retrieval from the system will be possible with very little training. Any training needed will be provided by the Montana Bureau of Mines and Geology.

Input to the data base will be controlled by the Montana Bureau of Mines and Geology, the agency mandated by law to compile statistics and communicate information about groundwater in Montana. This will provide quality control over which data are entered into the data base.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is $204,120 with Montana Bureau of Mines and Geology providing $72,320 and the grant $131,800. The Montana Bureau of Mines and Geology contributions cover salaries for a hydrogeologist and programmer at $62,730. Five thousand dollars is for computer room preparation, and $4,590 for miscellaneous expenses and contingency. The $131,800 grant will provide the salary for a data base technician at $22,500, and computer equipment at $87,600. Of the remainder, $13,200 will cover room preparation and equipment maintenance, and $8,500 is for miscellaneous expenses and contingency. Cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no short- or long-term negative impacts to the environment from this project. Long-term positive impacts will result from increased knowledge and understanding of Montana groundwater research and increased ability to apply the knowledge to prevent damage to the environment.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will be received indirectly through the application of the information provided in the groundwater data base. Information on groundwater quality can help improve domestic and agricultural water supply resources. Through information available on underground aquifers, the availability of the groundwater research can be improved. The groundwater resource can be conserved by using information regarding quantity and availability. Water quality can be protected by identifying contamination trends that can threaten public health.

RECOMMENDATION:

DNRC recommends a $100,000 grant. Funds are to be used for equipment and establishment of the data base system. The data base technician's salary will not be covered by this grant.

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APPLICANT NAME: Triangle Conservation District

PROJECT/ACTIVITY NAME: Expanded State Salinity Program

AMOUNT REQUESTED: $807,790 Grant

TOTAL PROJECT COST: $1,007,790

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The Triangle Conservation District (TCD), an organization of 11 conservation districts, operates a program of technical field assistance designed to correct saline seep problems and reclaim land on a farm-by-farm basis.

The district has been in operation for five years and because of its success in the Triangle Area, is proposing to expand to a state-wide program which would aid 33 counties in their treatment of saline seep.

Saline seeps are recently developed low-volume springs caused by a change in land use, predominantly from native perennial vegetation to the alternate crop-fallow dryland cropping system. The saline seep or discharge area, is actually a symptom of the problem of inefficient use of annual precipitation in the up-slope or recharge area. Because of saline seep, over 280,000 acres of formerly productive cropland have been taken out of production; much of that land has been reclassified to a lower taxable value. In addition to the loss of annual cash crops, the degradation of both surface and groundwater, which affects the public, is perhaps more severe. The salinity of the water, for example, may be as high as that of sea water. While reclamation of the surface soils has been documented, the reversal of the groundwater quality to usable values may not occur within our lifetime. Therefore, the prevention of saline seeps is just as important as reclamation of existing ones.

The Triangle Conservation District technical field team has developed a proven technique to work on a farm-by-farm basis to achieve saline seep prevention and reclamation using state-of-the-art methods of recharge area identification, intensive cropping, and reclamation techniques. In the five years the TCD has been working on the problem, 204 individual reclamation plans have been developed to work on 6,659 acres of seep. The implementation rate has been 84%, a very impressive rate considering the increased costs and managmeent necessary for the cooperators.

TECHNICAL FEASIBILITY ASSESSMENT:

Over the last 10 years, saline seep research in Montana and the northern Great Plains has found that saline seep is the result of widely accepted farming practices developed over the last 40 to 50 years. The alternate crop-fallow method has, and is, contributing to an accumulation of excess soil moisture which eventually becomes salinized and results in saline seep.

Simply stated, the solution to saline seep is to use the available moisture as it occurs through vegetative growth; this will eliminate excess soil moisture and shallow groundwater. Flexible intensive cropping practices and the use of permanent vegetation such as alfalfa are effective in the control and reclamation of saline seep areas.

In the Triangle Conservation District program, areas of moisture recharge--the area contributing to the seep formation--are identified with the use of a drill rig. The landowner is offered recommendations concerning soils, the extent of recharge area, USDA farm program requirements, marketing, weed problems, etc., which allow a site-specific method of saline seep control.

The cause and control of saline seep are presently well understood; the Triangle Conservation District team is working with landowners to fully understand the specific problems on their farms, and to modify their particular farming systems in order to find a workable solution to the seep problem.

FINANCIAL FEASIBILITY ASSESSMENT:

The request is for $807,790 of a total budget of $1,007,790. This would enable the Triangle Conservation District to make a statewide effort with three technical teams in the Triangle, the northeast and southcentral areas of the state. Approximately 33 counties would be involved. The Triangle Board of Directors recognizes that the Water Development Program is not a long-term funding source and they are attempting to obtain funding from Department of Natural Resources and Conservation's budget and from the proposed Legacy program.

The benefits of the project appear to far exceed its costs. The landowners are now paying approximately one-third of the costs of the treatment on their lands. They also monitor wells in the seep area and provide the data to the technical team so that the effects of these treatments can be documented.

SUMMARY OF PUBLIC BENEFIT:

The proposed project would have several benefits, including water and land management and improved crop and rangelands.

Primary benefits, received by the agricultural sector, include: significant reductions in crop and livestock losses, increased revenues, higher property values, erosion control, preservation of water quality in wells and stock ponds, dissemination of information necessary for farmers and ranchers to implement effective farming practices, and a continued or improved quality of life.

ENVIRONMENTAL IMPACT ASSESSMENT:

Correcting saline seep problems is the first priority of conservation districts in the Triangle area. Seep lands are totally unproductive and this treatment, through crop management, has begun to return these lands to production. Saline seep has also been identified as a major contributor to salinization of surface and shallow groundwater resources in Montana and the northern Great Plains.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $100,000. The Triangle Area Saline Seep project has been one of the most successful, if not the most successful project funded under this program. They have applied results of research in saline seep abatement done at MSU by Dr. Brown on several thousand acres of seep and shown this treatment method to be technically feasible and cost-effective. The success of this project has generated a larger project in Canada using the same approach as well as several demonstration projects around Montana. The Department of Natural Resources and Conservation would support the continuation of this project on a statewide basis and supports the Board's efforts to obtain funding to do so. However, it should be recognized that the Water Development Program cannot be a long-term funding source and cannot provide the level of funding required for a statewide program. If the Triangle is not successful in initiating a statewide program or finding a long-term funding source for the Triangle area, DNRC recommends that this $100,000 be used to continue the program in the Triangle area during the next biennium with emphasis on summarizing results, making them available to affected persons, and making attempts to see that the use of this methodology is continued through established state and/or federal entities.

APPLICANT NAME: Carbon Conservation District

PROJECT/ACTIVITY NAME: Willow Creek Stream Corridor Management

AMOUNT REQUESTED: $84,886 Grant

TOTAL PROJECT COST: $84,886

AMOUNT RECOMMENDED: $68,000 Grant

PROJECT DESCRIPTION:

The Carbon Conservation District proposes to stop streambank erosion, reduce the silt load being transported to Cooney Reservoir, and enhance the fish and wildlife habitat of Willow Creek located approximately 12 miles north of Red Lodge. This will be accomplished by installing riprap, backsloping, planting grass and other vegetation, and fencing the creek bed and banks to exclude livestock. Studies of the drainage in 1973, 1975, 1981 and 1983 document the sediment sources from areas where channel changes have increased stream velocities and eroded streambanks. In a 1981 inventory, 14,377 feet along Willow Creek had eroding banks. A 1983 study funded by the Montana Department of Health and Environmental Sciences developed site-specific recommendations to address the erosion problems. This proposal is based on the recommendation of that report.

The Carbon Conservation District will provide in-kind technical assistance services. The landowner has signed an agreement to cooperate with a land use management plan within the area, and to allow the site to be used for demonstrations.

TECHNICAL FEASIBILITY ASSESSMENT:

With input from the Conservation District, Department of Natural Resources and Conservation personnel and Soil Conservation Service personnel, the study plan recommendations were modified to include a greater amount of vegetative stabilization practices, reducing the amount of riprap. This is a more innovative and preferred alternative. The landowner has agreed to fence the creek which will greatly protect the newly vegetated area from being adversely impacted by grazing. The area will also be more valuable for fish and wildlife habitat. As well, this project will retard the acceleration of silt deposition in Cooney Reservoir.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is estimated to be $84,886. Of this amount $2,220 is for contract administration, $6,900 for engineering printing and miscellaneous costs, and $64,000 for materials and labor. Contingency and inflation add $11,708 to the cost. The estimates appear reasonable.

The requested grant will provide 100% funding of this project. The Montana Department of Fish, Wildlife and Parks and the Conservation District Division have agreed to contribute funds to the project if they have funds available. The landowner is not providing any direct funds to the project.

ENVIRONMENTAL IMPACT ASSESSMENT:

By not controlling this streambank sedimentation problem, long- and short-term negative environmental impacts will result. Productive agricultural land will be destroyed, water quality of Willow Creek degraded, sedimentation of Cooney Reservoir accelerated, and fish and wildlife habitat destroyed. This project will reduce and eliminate most of the sedimentation problems, which will result in long-term positive environmental impacts. Some minor short-term vegetative impacts may result from implementing the stabilization procedures.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will include improving land and water quality by controlling erosion. This will enhance fish and wildlife habitat, improve recreational opportunity, and improve agricultural and domestic water supplies. The soil resource will be conserved and property damage prevented.

RECOMMENDATION:

DNRC recommends a $68,000 grant.

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APPLICANT NAME: University of Montana, Montana Forest and Conservation Experiment Station

PROJECT/ACTIVITY NAME: Montana Riparian Vegetation Classification and Information System

AMOUNT REQUESTED: $99,771 Grant

TOTAL PROJECT COST: $99,771

AMOUNT RECOMMENDED: $85,000 Grant

PROJECT DESCRIPTION:

The Montana Forest and Conservation Experiment Station of the University of Montana proposes to develop a riparian vegetation classification system for Montana, and to provide the leadership for interagency cooperative implementation of the system. The riparian vegetation classification system will be useful in determining the best types of plant species to use in vegetative streambank stabilization, and in conducting uniform statewide inventories for weed control, grazing management, and wildlife habitat establishment. Areas found to have similar vegetation types should have similar potentials and management problems that can be uniformly addressed.

Riparian ecosystems are recognized as being the most productive of all ecosystems, and are vitally important to the maintenance, stability and productivity of their associated terrestrial and aquatic environments. These areas are subject to a broad range of uses: fish and wildlife habitat, livestock grazing, crop production, timber harvesting, recreation, transportation corridors, and mining. Because of this variability in uses, and the fragmented multiple ownership patterns of these areas, management is complex. Riparian ecosystems are less studied and less understood than other ecosystems. No accepted vegetative taxonomic classification systems exist, making communication about managing the areas difficult.

The need for a riparian vegetation classification system in Montana was emphasized by the Montana State Rural Areas Development Committee in 1982. The committee recommended the development of a vegetation classification system and suggested a framework for it. Committee members also recommended that an interagency cooperative approach be taken in implementing the plan. This proposal names the University of Montana as the leader of this cooperative approach, with the intention that once it is initiated, other agencies will lend cooperative support to continue the riparian management program beyond this grant period.

Specific activities this grant will fund include researching and evaluating existing riparian vegetation data, designing a vegetation inventory form, designing a central classification data storage and retrieval facility, hosting interagency cooperative workshops, collecting data where none now exists, demonstrating the application of developed taxonomy, hosting workshops, and publishing a riparian vetatation taxonomy. Demonstration projects will be established in the Yellowstone River drainage, and at sites in western, central or eastern Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

This innovative taxonomic classification system will be designed for use on all Montana riparian lands. It will provide useful information for managing the variety of activities which take place in the riparian zones. Such activities as streambank stabilization projects, riparian grazing systems, timber harvesting, fish and wildlife habitat enhancement, and weed control projects will benefit from the coordinated information provided through the riparian classification system. Some work has been done in evaluating existing data and classification systems, and in developing a framework for the new classification system.

Support for the formation of the interagency cooperative has been given by the U.S. Forest Service, the Soil Conservation Service, the Montana Department of Fish, Wildlife and Parks, and the U.S. Fish and Wildlife Service. No funding commitments have yet been made by these agencies.

A similar approach of a taxonomic classification system for "Forest Habitat Types of Montana" has been successful.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project and the grant request is $99,771. While agencies have supported the idea of forming a cooperative for implementing the riparian classification system, they have not yet made a financial commitment to the project.

The $99,771 will be to fund the project director, project scientist, post doctoral scientist and graduate assistant at a total cost of $73,460. Travel, supplies and computer costs will be $9,682. Contingency and indirect costs to the University of Montana will total $16,629. The costs appear reasonable.

ENVIRONMENTAL IMPACT ASSESSMENT:

Some current broadly applied riparian management practices are having short- and long-term negative environmental impacts on water quality, fish and wildlife habitat, and soil. An accepted riparian vegetation classification system will lead to recognition of problems on a site-specific basis and result in the use of site-specific management techniques. This will result in long-term positive impacts to the environment. No short- or long-term adverse affects will be associated with this project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from implementing this project will include improved fish and wildlife habitat. Water quality will be improved through the prevention of soil erosion, and property damage will be reduced. The land resource will benefit by proper riparian management and conservation of riparian vegetation.

RECOMMENDATION:

DNRC recommends a grant of $85,000 on the condition that by July 1986, an interagency cooperative is established and commited to implement the plan and its future use. Cooperators should be asked to contribute to the project, reducing the need for DNRC grant funds.

APPLICANT NAME: Rosebud Conservation District

PROJECT/ACTIVITY NAME: Vegetative Streambank Stabilization

AMOUNT REQUESTED: $ 5,500 Grant

TOTAL PROJECT COST: $13,947

AMOUNT RECOMMENDED: $ 5,500 Grant

PROJECT DESCRIPTION:

The Rosebud Conservation District proposed to reshape and stabilize approximately 2,000 feet of eroding agricultural land on the bank of the Yellowstone River near Hathaway. A primary purpose of the project was to demonstrate the effectiveness of using vegetation as a less expensive and more aesthetic alternative to rock riprap. In 1984, the river bank was reshaped, seeded and planted with stabilizing vegetation. The Soil Conservation Service, with input from the Montana Department of Fish, Wildlife & Parks, designed the project. The landowner and personnel from the SCS and the Rosebud Conservation District provided labor and materials.

A final report containing alternatives and implementation procedures will be prepared and distributed to other conservation districts, MSU's Extension Service, SCS offices and the Montana Department of Fish, Wildlife & Parks. The project will be advertised through agency newsletters and state and local news media. Tours of the site will be held.

This project was approved by the 1983 Legislature, but due to reduction in coal tax revenues, it was not funded. The Rosebud Conservation District loaned the landowner the $5,500, and the project was completed in the summer of 1984. The Rosebud Conservation District has reapplied for the previously approved amount of $5,500. If they receive the grant, it will be used as a reimbursement for their loan contribution to the landowner. A contract agreement between Rosebud C.D. and DNRC has been signed.

TECHNICAL FEASIBILITY ASSESSMENT:

The streambank erosion problem was thoroughly documented and the stabilization project was designed by the SCS with input from the Montana Department of Fish, Wildlife & Parks. The required 310 and 404 permits were obtained prior to beginning the actual work.

The selected alternative of vegetative stabilization over riprap is an innovative approach to stream stabilization. Besides being more aesthetic and much less expensive than riprap, it also provides fish and wildlife habitat and may help prevent further soil erosion higher up on the river bank.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project was $14,175 with $9,107 spent for earthwork and land leveling, $3,335 for labor, $310 for mulching and vegetation, $1,423 for netting and anchors and miscellaneous. The landowner contributed $3,200 in in-kind services and $3,563 in cash, and the conservation district granted $1,912 to the project. The remaining $5,500 was loaned to the landowner by the conservation district. The DNRC grant money if received will be used to reimburse the conservation district for their $5,500 loan contribution. The budget was adequate for the project completion.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without correction of the existing problem, continued adverse environmental impacts would result in the form of soil erosion, river sedimentation, destruction of agricultural land and fish and wildlife habitat. This project will prevent degradation and improve the environmental quality of the area. No negative long- or short-term environmental impacts occurred or will occur as a result of the project.

SUMMARY OF PUBLIC BENEFITS:

Public benefits from this project would be the solution of a streambank erosion problem on the Yellowstone River. Improvements would also be made to water and land quality by reducing sediment sources, and to agricultural irrigation and domestic water supply by reducing sediment. Soil will be conserved and erosion controlled. Fish and wildlife habitat will be enhanced by using natural vegetation. Property damage will be prevented by ceasing the sloughing-off of land. The availability of the agricultural land resource will be increased by protecting farmland from eroding.

RECOMMENDATION:

DNRC recommends a grant of $5,500 providing funds are not available from the grant which was approved for this project in 1983. If all the 1983 grant funds are available, the project will not receive funds from this new funding cycle.

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APPLICANT NAME: Teton County Conservation District

PROJECT/ACTIVITY NAME: Upper Teton Aquifer Study

AMOUNT REQUESTED: $155,470 Grant

TOTAL PROJECT COST: $199,765

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

Varied demands have been placed on the groundwater resource of the Upper Teton aquifer and the Teton River. Because of lack of information about the river, management of the water reserve in this area is on a crisis-by-crisis basis. Agricultural irrigators are accused of overuse and poor efficiencies by domestic users in Choteau; property owners are denied permission to irrigate from wells, and a portion of the Teton River is completely dewatered. These severe water rights and water use problems have prompted the Teton County Conservation District to prepare this study to assess the groundwater resources, to quantify the hydrologic system of the Upper Teton aquifer, and to determine the efficient use of surface and groundwater resources for irrigation. As well, concerns about the water supply quantity for the City of Choteau will be addressed.

These objectives will be carried out by identifying the permeability, yield, storage capacity, recharge and discharge boundaries, thickness, aquifer extent and water quality through a system of well drilling, testing and data evaluation. A well inventory and geology review will also be conducted.

Products of the study will be maps and reports that make aquifer management recommendations based on data collected. These products will be made available to the community of Choteau, the local irrigation districts and DNRC for use in making groundwater and surface water management decisions and in settling water rights disputes.

Montana Bureau of Mines and Geology will provide professional and technical work as well as some financial contribution. Drilling and logging will be contracted work.

TECHNICAL FEASIBILITY ASSESSMENT:

The methodologies selected for the groundwater study are sound and technically feasible. Given the variable geologic formations within the aquifer, the alternative of well drilling over seismic exploration will provide more necessary information, even though drilling is more expensive.

The need for the study and the controversy in the area are well documented. The results will help to resolve water rights disputes as well as determine impacts that issuance of water use permits have had on the aquifer.

The study is scaled down from what was originally thought to be necessary for a thorough groundwater study because of associated accelerated costs. The reduction will eliminate the collection of data with regard to recharge and discharge, but even without this information the project will be viable and beneficial.

The City of Choteau has also applied for a grant to study the aquifer with regard to quantity for the community. This Upper Teton Aquifer Study will provide the basic information needed to address Choteau's needs, and at a reduced cost.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $199,765 with Montana Bureau of Mines and Geology providing $44,295 for salaries, analysis, equipment, travel and publication. The grant will provide $155,470, of which $67,170 is for salaries, $44,800 for drilling and logging, $16,900 for travel, and $26,600 for equipment, analysis and publication. While cost estimates appear reasonable, they may not be completely adequate to provide all the answers to the Upper Teton groundwater use controversy. However, the information generated will provide useful and important information and will steer water users, managers and regulators in the right direction toward resolving the problems. Once the monitoring system is established, future costs for continual monitoring of the aquifer will decline considerably.

ENVIRONMENTAL IMPACT ASSESSMENT:

Continued unplanned development of the water resource in this area could result in water shortages, depletion and dewatering that would have severe long- and short-term adverse environmental impacts to public health, land quality, vegetation, and fish and wildlife. Information from this study can be used to make management decisions that will prevent these adverse effects and will then provide long-term positive impacts to the environment. Well drilling and construction may cause some adverse environmental impacts, but they will be short-term and minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from the project include improving domestic and agricultural water supplies by determining the extent and productivity of the groundwater resource. Management of the groundwater resource may result in its improved availability for domestic and agricultural uses. Sound management may help prevent dewatering of the Teton River, resulting in protection of fish and wildlife habitat. A more available water source could provide new business and employment opportunities.

RECOMMENDATION:

DNRC recommends a grant of $100,000. Addressing the City of Choteau's water supply situation is a priority use of these grant funds. DNRC recommends that other sources of funding be secured to insure the viability of this project.

APPLICANT NAME: Montana State University Reclamation Research Unit

PROJECT/ACTIVITY NAME: Hydrological Assessment of Pony Creek and Comparison to Cow Creek, Rosebud County

AMOUNT REQUESTED: $68,808 Grant

TOTAL PROJECT COST: $128,808

AMOUNT RECOMMENDED: $69,000 Grant

PROJECT DESCRIPTION:

The Reclamation Research Unit (RRU) of Montana State University proposes to acquire baseline hydrological data from the Pony Creek watershed prior to disruption of its headwaters by proposed coal mining activities. A comparison of that data with data collected from the Cow Creek drainage (a drainage impacted for 60 years by mining) will be made to isolate and describe the processes causing increases in salinization of agricultural lands in Cow and Rosebud Creek drainages. The Montana Power Company will fund a study in 1984 to monitor impacts to water quality or quantity resulting from the construction and use of an ash disposal pond in the headwaters of Cow Creek. Their monitoring plan only covers the middle and upper reaches of the drainage and only the surface water quality of Pony Creek. Coupled with this data gained from the Montana Power Company study, the Reclamation Research Unit study will be able to examine more thoroughly the watershads of both Cow and Pony creeks.

The need for this project is evidenced by the fact that very little environmental data has been collected from the Cow and Pony Creek drainages. Since the early 1970's salinization of the agricultural land at the confluence of Cow Creek and Rosebud Creek has occurred with no apparent problems in the undisturbed Pony Creek area. This study may clarify the influence of mining in the headwaters of small drainages, a topic subjected to much controversy in this area for several years.

Monitoring well drilling, testing and laboratory analysis will be carried out by Reclamation Research Unit personnel with the cooperation of the landowner, the Montana Power Company, and the Montana Board of Natural Resources and Conservation. Information generated by this study will be useful to and made available to the Coal Board of the Department of State Lands, landowners in the area, mining companies, the Water Resources Division of the Department of Natural Resources and Conservation, Saline Research Group of Montana State University, and other regulatory and permitting agencies.

TECHNICAL FEASIBILITY ASSESSMENT:

The alternatives chosen in designing the monitoring program are technically appropriate and will be complemented, not duplicated, by the Montana Power Company study. Through coordination with the Montana Power Company, study costs can be minimized and the data generated will be useful to a number of entities for solving problems and making future management and regulatory decisions.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this portion of the project is $68,808. Contract administration, travel and per diem costs total $18,968, professional personnel costs are $23,340, and laboratory analyses, drilling, and miscellaneous expenses are $26,500. The project budget appears adequate.

This project would not be feasible if it was not coordinated with the Montana Power Company study. Together the two projects complement each other both financially and technically. The cost of the Montana Power Company study is estimated to be over $60,000 for a total project cost of $128,808.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without utilization of the data this project will provide, long-term adverse environmental effects to surface and groundwater quality and loss of vegetation production on crop and range land may occur. Use of this data can predict where impacts might occur and can help in providing solutions to resolve or prevent the environmental degradation, therefore resulting in positive long-term environmental effects.

Some short-term negative environmental effects may result from installation of monitoring wells, but these impacts will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this study may include the solving of an identified salinization problem by identifying the cause of the problem. Water and land quality can then be protected and improved. The agricultural land resource will be conserved and domestic, wildlife, and agricultural water supplies protected. Agricultural crop and forage production will be improved.

RECOMMENDATION:

DRNC recommends a $69,000 grant.

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APPLICANT NAME: Town of Ekalaka

PROJECT/ACTIVITY NAME: Development of a Water and Sewer System Facilities Plan

AMOUNT REQUESTED: $17,000

TOTAL PROJECT COST: $23,000

AMOUNT RECOMMENDED: $17,000 grant

PROJECT DESCRIPTION:

Ekalaka was authorized a $17,000 Water Development Grant by the 1983 Legislature to prepare a water and sewer facilities plan. The grant was approved contingent on availability of program funds through June 30, 1985. These funds are not expected to be available to Ekalaka because of limited program funds. The study is complete, and the town has reapplied for the $17,000 grant. The community has acquired $6,000 for the study with the remaining $17,000 currently outstanding to the engineering firm.

Ekalaka has completed a facilities study for both its water and sewer systems. The town is using the results to plan an orderly rehabilitation of their water and sewer utilities.

Ekalaka retained the services of an engineering firm to prepare the study, which mapped the existing systems, evaluated component conditions, analyzed growth trends, evaluated system needs, and prepared prioritized recommendations for the repair and expansion of these systems.

Ekalaka's water and sewer facilities serve a population of approximately 630 people within the city. Since it is the county's only monitored water system, a substantial portion of the rural population also obtains its drinking water from this source. Most of the town's population is elderly and on fixed income.

The water system was constructed in 1935, and has undergone many extensions and improvements since then. Prior to the study, the location and adequacy of many underground structures was not known. It was questionable whether existing water storage was adequate to provide both water service and fire protection. Instead of continuing the temporary repairs, a total system analysis was prepared.

The waste water treatment system, which consists of a small extended aeration plant, is overloaded and frequently out of compliance with discharge regulations. The town has been prohibited by the Department of Health and Environmental Sciences from providing any new hookups until a plan of action to correct the situation is developed and implemented.

TECHNICAL FEASIBILITY ASSESSMENT:

In a situation such as Ekalaka's, an engineering assessment of the systems is required before attempting any improvements. The information gained from this study provided the basic information necessary to adequately plan for system improvements.

FINANCIAL FEASIBILITY ASSESSMENT:

Primary benefits would be received by the residents of Ekalaka. These benefits include possible disease prevention, correction and improvement of water quality problems, water availability, added or improved domestic water supplies, fire protection, and an improved quality of life.

ENVIRONMENTAL IMPACT ASSESSMENT:

No environmental impacts will directly result from this study. Beneficial impacts to water quality would result if this study provides the basis for waste water treatment improvements.

RECOMMENDATIONS:

DNRC recommends a grant of $17,000 for Ekalaka's water and sewer system facilities plan. The total of the Water Development and Renewable Resource Development program grant funds received in the 1983-1984 and 1985-1986 biennium shall not exceed $17,000.

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APPLICANT NAME: Lewis & Clark/Jefferson Valley Conservation Districts

PROJECT/ACTIVITY NAME: Prickly Pear Stream Corridor Management Plan

AMOUNT REQUESTED: $173,866 Grant

TOTAL PROJECT COST: $215,366

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The Lewis & Clark and Jefferson Valley Conservation Districts propose to implement a portion of the techniques and activities identified in a 1984 Stream Corridor Management Plan for Prickly Pear Creek to provide streambank stabilization sediment control, and improvement in water quality, wildlife and fisheries habitat, and recreational opportunities.

The Prickly Pear Creek drainage originates in the Elkhorn Mountains and flows through the Helena valley to the Missouri River. This creek has been impacted by numerous human activities, including hard-rock and placer mining, channelization by roads and railroads, construction, industrial wastes disposal, sewage disposal, irrigation runoff and dewatering. Efforts are planned and underway by several agencies to address these impacts and upgrade the quality and usefulness of the stream. This proposal will address major causes of sedimentation of a portion of the stream near Clancy and will provide solutions mainly through bank reshaping and use of vegetative plantings to provide streambank stabilization and fish habitat. Fences will be built to protect riprarian vegetation from grazing. Some riprap and natural materials such as boulders will also be used to provide bank stabilization. The area will be used as a demonstration area to promote future rehabilitation of this area and others through innovative stream corridor management plans. Soil Conservation Services, Conservation District, and DHES personnel will be involved with the project design and implementation along with the landowners. Construction work will be contracted.

TECHNICAL FEASIBILITY ASSESSMENT:

The Prickly Pear Corridor Management Plan, conducted by a consulting group consisting of an engineer, hydrologist, geologist, biologist, ecological consultant, wildlife manager, and recreation specialist, identified several specific corrective alternatives for Prickly Pear Creek. The proposed project will fund only a portion of the solution alternatives; however, the alternatives selected will provide the best visual demonstration of streambank stabilization and provide the most immediate corrective results.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the selected alternatives is $215,366, of which $10,100 is for contract administration, $24,150 for professional technical costs, $151,410 for construction costs and $29,706 for inflation and contingency. The Soil Conservation Service will provide 25,000, the Conservation Districts 7,500, the Department of Health and Environmental Sciences $1,500, and the landowner $7,500. The grant request is for $173,866.

These costs can be modified to reflect a reduced grant amount. No financial commitment from the landowners has yet been made. Construction estimates appear reasonable, but contract administration costs may be excessive.

ENVIORNMENTAL IMPACT ASSESSMENT:

Without controlling the sedimentation occurring along Prickly Pear Creek, water quality will continue to be degraded, impacting fisheries and domestic and agricultural water supplies. Through implementation of the project, these negative environmental impacts can be lessened resulting in long-term positive environmental impacts. Some short-term adverse effects may occur during construction, but they will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this stream stabilization project will be the improvement to land and water quality by controlling erosion and reducing sediment. Fish and wildlife habitat will be improved through the use of vegetative plantings, resulting in increased recreational opportunities. Through reduction of stream sediment, domestic and agricultural water supplies will be improved and a solution to a streambank erosion problem will be demonstrated.

RECOMMENDATION:

DNRC recommends a grant of $100,000. The portion of the project intended for fish and aquatic habitat improvement demonstration must be included in the funding. Selection of other portions should be based on the priorities listed in the corridor management plan. They will result in a project with tangible results.

APPLICANT NAME: Cut Bank North Glacier Water and Sewer District

PROJECT/ACTIVITY NAME: North Cut Bank Sewer System

AMOUNT REQUESTED: $175,000 grant

TOTAL PROJECT COST: $406,000

AMOUNT RECOMMENDED: $50,000 grant, $125,000 loan

PROJECT DESCRIPTION:

The Cut Bank North Glacier Water and Sewer District is a public agency located about one mile north of Cut Bank. A total of 65 residences (approximately 200 people) in the district would be served by this proposed project. Presently, the residents use individual sewage disposal systems, i.e., septic tanks and drainfields, cesspools, etc. Because of the presence of generally unsuitable soils in the area for such systems, many systems have failed or are failing. Surfacing sewage is creating a hazard to public health, contaminating area wells and polluting Old Maids Coulee and Cut Bank Creek. The Glacier County Attorney and Montana Department of Health and Environmental Sciences have recently ordered one subdivision in the district to correct its failing multi-family sewage disposal system and eliminate the present public health hazard, or face prosecution. The district has made preliminary contact with the Water Quality Bureau (WQB) regarding the possibility of utilizing EPA construction grant funds on the sewer project and have received a rather high priority ranking.

This project consists of design and construction of a complete sewage collection system to serve the district and a lift station and force main to pump the collected raw sewage to the Cut Bank lagoon system. The project will consist of approximately 9,400 ft. of 8-inch gravity sewer line, 30 manholes, lift station, and 5,100 ft. of 4-inch force main. A facilities plan, which is a comprehensive preliminary engineering study, needs to be completed on the project before EPA will participate in design and construction funding of the project. The plan will consider alternative solutions, conduct a cost effectiveness analysis, etc. and will be funded by local monies and an EPA advance of approximately 75% of the estimated costs of the facilities plan. The project proposed is the engineer's "best estimate" of the alternative that will ultimately be chosen when the facilities plan is complete.

TECHNICAL FEASIBILITY ASSESSMENT:

In the required facilities plan, several appropriate alternative solutions to the sewage treatment problems will be studied and the most cost effective solution will be selected. At this time, however, collection and transport to the Cut Bank sewage treatment system appears to be the alternative that will be found most cost effective. It certainly is a technically feasible alternative and would solve the district's present sewage disposal problems.

The facilities plan and design of all improvements will be reviewed and approved by the WQB prior to commencement of construction. The WQB supports and concurs with the need for the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $406,000 of which $350,000 is the cost of construction and contingencies and the balance is engineering, administration and legal. The facilities plan will cost an estimated $17,500 and will be funded by the EPA and the district. The total project cost includes the cost of the facilities plan. The application is for a grant of $97,125 and a loan of $77,875, the combined total of which amounts to the estimated project design and construction cost not funded by an EPA grant. The district has indicated it would consider a grant of less than requested and a proportionately larger loan, if necessary, in order to insure a timely completion of the project. In addition, the district intends to consider Farmers Home Administration (FmHA) as a source of loan funds for the local share.

The district can issue Revenue Bonds purchased by DNRC or FmHA, upon approval of the voters within the district. Proceeds from these bonds would be used to cover the local share of project costs. The estimated costs appear to be realistic and reasonable and the chosen solution will be the most cost effective alternative.

ENVIRONMENTAL IMPACT ASSESSMENT:

No significant adverse environmental impacts are anticipated with this project. Only the unavoidable, short-term impacts typically associated with similar municipal utility construction projects are expected. This project should enhance the environment by eliminating the serious public health hazard and water pollution problem created by failed individual sewage disposal systems.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of the Cut Bank North Glacier Water and Sewer District. The major public benefits of the project are as follows: elimination of a public health hazard, prevention of potential disease, and elimination of a source of pollution of Old Maids Coulee and Cut Bank Creek, thereby improving water quality.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $50,000 and a loan of $125,000, contingent upon the district passing the necessary bond issue, securing EPA construction grant funds and completion and approval of an EPA facilities plan. Any reduction in scope should result in a proportionately smaller grant, and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Seeley Lake Missoula County Water District

PROJECT/ACTIVITY NAME: Water and Sewer System Facilities Plan Development

AMOUNT REQUESTED: $ 9,000 grant

TOTAL PROJECT COST: $22,910

AMOUNT RECOMMENDED: $ 9,000 grant

PROJECT DESCRIPTION:

The Seeley Lake Missoula County Water District was authorized a $9,000 Renewable Resource Development program grant by the 1983 Legislature to prepare a water and sewer facilities plan. The grant was approved contingent on availability of program funds through June 30, 1985. These funds are not expected to be available to the district because of limited program funds. The study is partially complete and the district has reapplied for the $9,000 grant. The district has acquired $13,910 to fund the study with the remaining $9,000 needed to complete the sewer facilities plan.

The purpose of the water facilities study was to increase capacity in the existing service area and investigate the expansion of the water district service area, including additional supply and storage. The study plan included provisions for development of long range improvement plans and a recommended five-year capital development plan.

The purpose of the sewer facilities plan was to establish a long range sewer service area and recommend a five-year development program. The study was to develop a collection and treatment system and recommend location of the facilities.

The district has submitted a separate application to the Water Development Program for water system improvements recommended in their water system facilities plan.

TECHNICAL FEASIBILITY ASSESSMENT:

The study scope has been reduced below that proposed in 1983 because of budget constraints. The proposed hydrology study, test well drilling program and soil testing elements were dropped. The remaining study scope should provide the information needed for the district to prepare a water and sewer system improvement program.

FINANCIAL FEASIBILITY ASSESSMENT:

The cost of the facilities plan is $22,910. The district has acquired $13,910 (Missoula County--$6,000, Department of State Lands--$2,000, Water District--$5,910) and has reapplied for a $9,000 grant to cover remaining study costs.

ENVIRONMENTAL FEASIBILITY ASSESSMENT:

This project would plan for adequate sewage disposal and fewer individual septic systems in the Seeley Lake area. The potential for water supply contamination would be less and future housing developments would have adequate sanitary facilities.

This project will have no long- or short-term adverse environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

The primary benefits of the project would be received by the residents of Seeley Lake and the surrounding area. These benefits include: possible prevention of disease, improving a domestic water supply, prevention of property damage and improved water quality.

RECOMMENDATION:

DNRC recommends a grant of $9,000 for completion of a water and sewer system facilities plan. The total of the Water Development and Renewable Resource Development program grant funds received in the 1983-1984 and 1985-1986 biennium shall not exceed $9,000.

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APPLICANT NAME: University of Montana

PROJECT/ACTIVITY NAME: Missoula Valley Aquifer Study

AMOUNT REQUESTED: $176,335 Grant

TOTAL PROJECT COST: $176,335

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The University of Montana proposes to study the groundwater aquifer of the Missoula Valley to assess current withdrawal effects and future development of the resource. Today the citizens of Missoula Valley rely entirely on a near surface sole source aquifer to supply 7.6 billion gallons of water annually for their community. However, little is known of the sustained yield and management potential of this unconfined aquifer. Further, the aquifer is directly connected to the land surface with only sporadic layers of silt and clay protecting it from downward infiltrating pollution. Without a detailed evaluation of this system and an evaluation of current and future aquifer management schemes, the resource is in jeopardy of being improperly managed, overused, or contaminated.

Methodologies selected for this study include evaluating current water quality and potential sources and means of contamination, and quantifying aquifer properties. Also, the effects of current and future withdrawal rates on the resource will be assessed and a long-term monitoring program will be initiated. Finally, a predictive numerical groundwater basin computer model will be developed for local government use in making decisions about water supply management.

Well drilling and water quality analysis will be contracted services while all other work will be performed by University of Montana personnel. The City of Missoula and Missoula County officials strongly support this proposal, and have indicated they may be able to provide additional financial resources. However, no funding commitments have been made.

TECHNICAL FEASIBILITY ASSESSMENT:

In 1979, a very general hydrological study of Missoula Valley concluded that more water from the aquifer was being consumed than was being recharged into it. Additionally, in 1983, the Rattlesnake Creek surface water supply system was abandoned and the groundwater aquifer began supplying 100% of the valley's domestic water, an obvious increase in consumption of groundwater. This project will refine, update and expand the 1979 study and will provide information that city and county officials can use in making important management decisions.

City and county officials will be responsible for long-term monitoring of the aquifer beyond the end of the study to detect changes in water quality and quantity.

The alternatives selected for conducting this groundwater resource assessment are sound and feasible methodologies.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $176,335 with this grant providing 100% funding. Local government officials have expressed support for the study; however, no financial committment has yet been made.

Of the $176,335, $56,431 is for professional personnel salaries and benefits. Of the remainder, $60,875 is for well drilling, water quality analysis, and computer time; $27,400 is for purchase of water level recorders, precipitation gages, meters and computer software; $14,700 is for supplies, equipment maintenance, travel, communications and report production; and $16,429 is for indirect costs of the project.

Cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the information and knowledge necessary to make management decisions regarding development and use of the Missoula Valley aquifer, severe water quality and quantity problems can result, adversely affecting the public health and welfare of the residents of the Missoula Valley, and the quality of the groundwater resource. Results of this study when applied to resource management decisions can prevent these adverse impacts from occurring and can result in long-term positive environmental effects. No adverse environmental effects will result from this project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include the prevention of disease by monitoring the water quality of the water source, and protecting and conserving the domestic water supply by managing development of the Missoula Valley aquifer.

RECOMMENDATION:

DNRC recommends a $100,000 grant for this project on the condition that local contributions increase the project revenue to a level where the project is viable and where final results will be useful and usable.

APPLICANT NAME: Stillwater County Conservation District and Beartooth Resource Conservation and Development Area

PROJECT/ACTIVITY NAME: Saline Seep Reclamation and Plow-out

AMOUNT REQUESTED: $ 94,912 Grant

TOTAL PROJECT COST: $131,643

AMOUNT RECOMMENDED: $ 80,000 Grant

PROJECT DESCRIPTION:

There are three major water quality problems in Montana; two of these, salinity and sediment, will be addressed in this study and demonstration project. Saline seep contributes both to sediment and salinity and is a major threat to groundwater pollution, salinization of fresh water reservoirs and degradation of farm lands. Participants in this study will drill and case wells throughout the study area and monitor those wells continuously to determine water quality and quantity changes in the saline seep area as affected by cropping systems. Similarly, studies of a site prior to plow-out and for a period afterwards will be established to collect hydrological background information on effects of plow-out to water quality and quantity.

TECHNICAL FEASIBILITY ASSESSMENT:

The need for the study is shown by the fact that in Stillwater County alone 23,000 acres of the total 104,000 acres (22%) of dryland cropland is affected by saline seep and in all of Montana more than 300,000 acres are affected. This study will be carried out in the northeastern part of Stillwater County in the areas known as Wheat Basin and Hailstone Basin where a project to monitor water changes was initiated in the 1970's. This study will utilize much of the information gained through that period and update monitoring in the existing wells. Physical studies, education and demonstrations are necessary to implement corrective measures for saline seep. This project is expected to span five years and provide answers to two questions: 1) Can surface and groundwater affected by saline seep encroachment be improved once the practices contributing to the problem have been corrected, or does it continue to degrade?, and 2) Can applying saline seep control measures on new areas of plow-out also prevent the degradation of water quality?

This project is not a duplication of the Triangle Saline Seep Study; rather it expands the use of information gained through that study in a totally different geological area where saline seep is a major problem.

Technical assistance and program coordination will be through cooperative efforts of the Soil Conservation Service (SCS), Montana Bureau of Mines and Geology (MBMG), and Montana State University staffs. Project administration will be handled by the Conservation District.

FINANCIAL FEASIBILITY ASSESSMENT:

The project costs appear to be reasonable, based on state rates and pay scales. The project costs were prepared for the Conservation District jointly by the MBMG and SCS. There are no short-term monetary benefits from the project. Efficient use of existing wells and previously collected nonpublished data makes this study cost-effective.

Funding from other sources include $27,431 from the MBMG, $3,310 from the Stillwater Conservation District, $800 from SCS, and $5,190 from the Water Quality Bureau of the State Department of Health and Environmental Sciences. This funding and in-kind services have been committed.

ENVIRONMENTAL IMPACT ASSESSMENT:

There are no negative impacts created by this project. Positive potential impacts are: 1) reduction of soil erosion; 2) reduction of stream sedimentation; 3) improvement of livestock water quality; 4) minimized degradation of surface and groundwater; 5) preservation and increased quality of wildlife habitat; and 6) improvement of soil quality.

SUMMARY OF PUBLIC BENEFITS:

With water and land being two of Montana's prized resources, anything of significance that can be done to stop the degradation of those resources and ultimately improve them is a benefit to the entire state. Management systems that result from this study will be offered for demonstrations and shown by tours, local high school students will be offered jobs within the study and provided some scholarship opportunities, and correlation of this study with the Triangle Saline Seep Study will result in better use of control and reclamation methods.

RECOMMENDATION:

This project will utilize practices established from the Triangle Saline Seep Study that has received funding from DNRC, expand that information to a different geological area and utilize information gained from previous work in this geographic area. DNRC recommends a grant of $80,000 and suggests the budget be scrutinized particularly ie regard to equipment purchase.

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APPLICANT NAME: Greenfields Irrigation District

PROJECT/ACTIVITY NAME: Irrigation System Rehabilitation Automation

AMOUNT REQUESTED: $49,244 Grant

TOTAL PROJECT COST: $98,488

AMOUNT RECOMMENDED: $17,000 Grant and $32,244 Loan

PROJECT DESCRIPTION:

The project proposal calls for the rehabilitation and automation of a key bifurcation works so that water can be accurately and efficiently delivered into two canals, plus the installation of two Parshall flumes in large wasteways. The automation will be the installation of radial arm gates with electronic controls coupled to a computer-type monitor system at the district's office.

TECHNICAL FEASIBILITY ASSESSMENT:

Better water management within the system as well as with the participants is the goal of the District. This is a step in the overall plan to make the system function efficiently. The Parshall flumes are standard measuring devices that fit the needs. The radial arm gates with electronic controls coupled to the district office allow for timely flow adjustments to be accurately made and monitored. The project design and construction is being handled by the Greenfields district staff who are capable in this field.

FINANCIAL FEASIBILITY ASSESSMENT:

The project is not expected to stand alone and return dividends. The real need is better water management. Currently this District's assessments are $13.50 per acre and the farmers feel they cannot afford an increase; thus the request is for a grant.

The project cost is $98,488 as estimated by Greenfields manager from standard material and construction costs in the area. One-half the cost is budgeted for by the Greenfields Irrigation District for 1984 construction.

ENVIRONMENTAL IMPACT ASSESSMENT:

There are no negative environmental impacts created by the project or its construction. Benefits will result from better water management within the system and the control of waste waters that may cause sedimentation in the Sun River or Muddy Creek.

SUMMARY OF PUBLIC BENEFITS:

The Greenfields Irrigation District services 600 farms and 83,000 acres. This request is only a small part of an overall plan to update and automate the system for better water management. With the water conservation, siltation into Muddy Creek and the Sun River will be diminished, thus accounting for greater public benefit.

RECOMMENDATION:

The Greenfields Irrigation District is upgrading their overall system for improved water management, which has direct monetary benefits. Therefore, DNRC recommends that a grant of $17,000 and a loan of $32,244 be offered to this applicant.

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APPLICANT NAME: Greenfields Irrigation District

PROJECT/ACTIVITY NAME: Irrigation Structures Automation

AMOUNT REQUESTED: $ 54,226 Grant

TOTAL PROJECT COST: $351,900

AMOUNT RECOMMENDED: $ 54,000 Grant

PROJECT DESCRIPTION:

The Greenfields Irrigation District, Greenfields Division of the Sun River Project, contains approximately 80,800 acres of irrigable lands, located north of the Sun River in south-central Teton County and northwest Cascade County. The major irrigation structures are Gibson Dam and Reservoir, the prime storage facility; Sun River Diversion Dam and Tunnel No. 1; Pishkun Supply Canal which conveys water to Pishkun Reservoir; and Willow Creek Canal which conveys water to Willow Creek Reservoir. The distribution system includes 119 miles of main canals, 384 miles of lateral, 232 miles of open drains, 19 miles of closed drains and central structures to serve the 80,800 acres of irrigable lands.

Water is transported through the main canals a distance of about 50 miles from the main storage reservoir to the heart of the irrigated area. The problem is that flows throughout the system have to be matched exactly with the irrigation demand because there are not adequate waste or spill facilities. Present monitoring and diversion of water is done manually, that is, field readings of water flow at the structures are taken and the gates manually manipulated to control water loss.

The purpose of this proposal is to rehabilitate key structures and provide an automated system to communicate with 10 key sites along the canals and lateral systems from the operation headquarters at Fairfield. The radio communication system will allow water level monitoring at the 10 sites, provide warning alarm signals when dangerous levels are reached, and allow gates to be remotely operated.

The project should result in a noticeable decrease in the total annual diversion from the Sun River, which now averages 239,000 acre-feet. There should be an appreciable reduction in return flows in Muddy Creek and other main drainages back to the Sun River.

TECHNICAL FEASIBILITY ASSESSMENT:

Greenfields Irrigation District will be its own general contractor and perform the administration, engineering, structural modifications, and the logistical management necessary for the project. The technology necessary to provide the results desired is readily available and would provide much more timely control of the irrigation system. The cost estimates have been derived from manufacturer information and are as accurate as possible given the level of available information. Given experienced assistance with the design and implementation of the project, the irrigation district will be able to accomplish the project in the fashion planned.

FINANCIAL FEASIBILITY ASSESSMENT:

This project received a sufficiently high ranking in 1983 to receive some funds prior to the depletion of coal severance tax monies for their category. An $87,000 grant was approved and $32,774 has been disbursed. In addition to the grant a $100,000 loan was approved; however, those funds have not been acquired by the district. The additional funds used in this project will be provided from reserve accounts and/or conventional loans as necessary.

Current assessment rates are approximately $13.50 per acre. Direct benefits will come from water savings at $12,150 per year and indirect savings from future crop losses due to inadequate water monitoring in drought years of an estimated $562,000 one year out of ten. In addition the precise water management will slow seepage and avoid excess waste water being channelled into drainage ways.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts created by this project. Construction will occur inside the existing structures. Positive impacts will occur from water conservation and the protection of land from salinization.

SUMMARY OF PUBLIC BENEFITS:

The Greenfields Irrigation District served 600 farms and more than 80,000 acres. This request is only a part of an overall plan to update and automate the system for better water management. With water management and conservation, siltation into Muddy Creek and the Sun River will be diminished, thus giving greater public benefits.

RECOMMENDATION:

DNRC recommends a grant of $54,000 for this project providing funds are not made available from the grant approved by the 1983 Legislature. If any portion of the 1983 grant funds are provided the applicant, funds from this funding cycle will be reduced in a like amount.

APPLICANT NAME: Carbon Conservation District

PROJECT/ACTIVITY NAME: Cottonwood Creek Stream Corridor Management Project

AMOUNT REQUESTED: $27,068 Grant

TOTAL PROJECT COST: $27,068

AMOUNT RECOMMENDED $20,000 Grant

PROJECT DESCRIPTION:

The Carbon Conservation District proposes to stop streambank erosion and enhance wildlife habitat along a portion of Cottonwood Creek located four miles northwest of Roberts. This will be accomplished by using vegetative stabilization techniques, riprap structures, and fencing the streambank area to exclude livestock and protect wildlife habitat.

In 1983 the Carbon Conservation District obtained funds from the Department of Natural Resources and Conservation to conduct a study of erosion problems along Cottonwood Creek. This proposal is based on the recommendations of that study.

Erosion problems along Cottonwood Creek are a result of heavy utilization of streambank vegetation, rather than any physical alteration of the stream. The study identified these areas and others where scour activity occurs due to obstructions in the stream.

The landowner has signed an agreement to cooperate with a land use management plan, and to allow the site to be used for demonstrations.

TECHNICAL FEASIBILITY ASSESSMENT:

The study indicated that installation of the proposed erosion control measures may mitigate but will not stop the natural processes of erosion in the area. Use of riprap and vegetative plantings is limited to the most severe areas, since exclusion of livestock will enable the less eroded areas to heal naturally. These are the preferred alternatives. Recommendations are also made to remove snags and trees from the creek channel. The construction of a dike appears necessary to prevent flooding and erosion of an adjacent field. The fenced riparian area will be valuable wildlife habitat. The sediment loading of Rock Creek will be lessened by reducing the sediment in its tributary, Cottonwood Creek.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost and the grant request is $27,068. Of this amount, $2,120 is provided for contract administration, $2,850 for engineering and miscellaneous costs, and $20,480 for materials and labor. Inflation and contingency adds $3,733 to the cost. These cost estimates appear reasonable. No other funding sources have been secured for this project. The landowner is not contributing direct funds to the project.

ENVIRONMENTAL IMPACT ASSESSMENT:

Left uncontrolled, continued erosion problems along the banks of Cottonwood Creek can result in long-term negative environmental impacts. Productive agricultural land and wildlife habitat will be lost, water quality degraded, and the sedimentation of Rock Creek increased. This project will reduce these impacts and will have long-term positive effects. Minor short-term negative impacts may result from implementation of stabilization techniques.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include improving land and water quality by controlling erosion. This will result in improved to agricultural and domestic water supplies, enhanced wildlife habitat and improved recreational opportunity. The soil resource will be conserved and property damage prevented.

RECOMMENDATION:

DNRC recommends a $20,000 grant.

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APPLICANT NAME: Montana State University, Department of Biology

PROJECT/ACTIVITY NAME: Impacts of Small Hydropower Development on Trout Population with Emphasis on Winter Habitat

AMOUNT REQUESTED: $ 99,698 Grant

TOTAL PROJECT COST: $121,498

AMOUNT RECOMMENDED: $ 97,000 Grant

PROJECT DESCRIPTION:

The Department of Biology of Montana State University proposes to evaluate the impacts of small hydropower development and operation on trout populations in South Willow Creek near Pony, Montana, with emphasis on the winter period. Criteria for recommending minimum flows during winter for trout in small streams will be developed. Two or more additional streams will also be studied to encompass the type of physical extremes found at proposed small hydropower development sites in Montana.

On South Willow Creek, the impact of hydropower development will be assessed by evaluating trout abundance in areas above, within and below the development site using standard mark and recapture techniques. The effects of the permitted 10 cubic feet per second minimum flow set for this site by the Montana Department of Fish, Wildlife and Parks will be evaluated. Fish food organisms will be monitored to determine if minimum flows influence food abundance or availability. Gas supersaturation and turbine-induced trout mortality will be evaluated. Trout distribution and habitat characteristics will be evaluated in South Willow Creek and two or more other streams, and techniques will be developed for determining winter habitat preference. Winter ice conditions will be monitored and fish populations and habitat requirements documented. This information will be used to evaluate the adequacy of the permitted 10 cfs minimum flow on South Willow Creek during winter months. The wetted perimeter method used by Montana Department of Fish, Wildlife and Parks in setting minimum flow requirements will also be evaluated at these sites, along with the instream flow incremental methodolgy. Alternative methods may also be developed and tested at these sites.

The need for this demonstration is evidenced by the mushrooming of permit applications in Montana for small hydro developments, and the lack of information available to assess the effects of wintertime stream flow reduction and weather conditions on fish habitat and populations. Because this information is not available, the Montana Department of Fish, Wildlife and Parks has taken a conservative approach to setting minimum flow recommendations to insure protection of the fishery. As a result, at times these minimum flow requirements make the hydropower projects economically unfeasible. The results of this study will provide information which can be used to make more accurate winter stream minimum flow recommendations.

TECHNICAL FEASIBILITY ASSESSMENT:

An extensive literature search of winter habitat studies of fish was conducted to insure the project was not a duplication of other studies. The selected sites for the study are representative of the types of areas proposed for small hydropower development in Montana, so results of the study will be applicable in other areas of the state. Some techniques used in the study are proven methodologies, while others will be developed and tested with this project. If successful, these methodologies will provide an innovative approach to solving a controversial issue. The selected alternatives appear technically feasible.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $121,498 with the grant providing $99,698, U.S. Fish and Wildlife Service $16,800, and the Montana Cooperative Fishery Unit providing $5,000. The U.S. Fish and Wildlife Service contribution will fund the salary of the contract administrator, and the Cooperative Unit will pay for pre-study data collection on South Willow Creek. The $99,698 grant funds will provide $18,478 for contract administration, and $81,220 for salaries, benefits, travel, equipment and report writing expenses. The cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the information generated from this study, the development of small hydropower facilities could adversely affect fisheries as well as water quality and quantity on small Montana streams. Results of this study may help to minimize these impacts and will therefore provide long-term positive environmental effects. No adverse short- or long-term environmental effects are anticipated from this project.

SUMMARY OF PUBLIC BENEFITS:

Public benefits which may occur as a result of this project include the protection of water quality and quantity by defining the impacts of reduced flow and gas supersaturation. If minimum flows are defined as a result of the study, the availability of the renewable hydropower resource will be enhanced, providing new business and employment opportunities. Fish and wildlife will be protected, providing recreational opportunities.

RECOMMENDATION:

DNRC recommends a $97,000 grant.

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APPLICANT NAME: Antelope County Water and Sewer District

PROJECT/ACTIVITY NAME: Water Supply and Sewage Treatment System Construction

AMOUNT REQUESTED: $60,000 grant and $100,000 loan

TOTAL PROJECT COST: $580,000

AMOUNT RECOMMENDED: $60,000 grant and $100,000 loan

PROJECT DESCRIPTION:

The community of Antelope has 45 residences or places of business; some use shallow wells as a water source but most haul water and use cisterns because the groundwater is of poor to unacceptable quality. Five of the wells have recently been found to be contaminated because of their proximity to septic tank drainfields. The use of septic tanks is a problem because tight clay soils cause poor drainage. The septic tanks require frequent pumping, often onto the surface or into borrow pits, and in the winter, frost makes the drainfields totally useless.

The community is proposing to develop a new water supply and distribution system, consisting of a well, a pumping system, housing for well controls, underground concrete water storage, and the necessary distribution and private service lines. The proposed sewer improvement facility includes a two-cell total retention lagoon, lift station, 8-inch gravity collector mains, and 4-inch service lines. Sheridan County has spent $4,000 for a feasibility study and secured a number of funding commitments for the construction project. A Comunity Development Block Grant for $130,000 has been awarded, and the EPA Construction Grant program has committed $150,000 for the sewerage facility project. A Farmers Home Administration loan for $100,000 is also scheduled for the project. The 1983 Legislature awarded the district a $100,000 grant and a $100,000 loan authority from the water development program. Because of the unexpected coal tax revenue shortfall, a partial grant of $42,000 was awarded for the project for the water supply test well. Antelope reapplied for the grant balance and loan amount previously authorized.

TECHNICAL FEASIBILITY ASSESSMENT:

Generally, a system such as the one proposed for Antelope should not present any unusual technical problems. The test well program has been modified due to the cost and technical difficulties associated with the 900-foot well originally proposed. Rather, a testing program has been developed for the shallower aquifer in the area where well logs and geological analysis document good supply potentials. The Water Quality Bureau of the Department of Health and Environmental Sciences must approve the designs and specifications for both the water and sewerage systems.

FINANCIAL FEASIBILITY ASSESSMENT:

The $580,000 project cost has increased by $72,000 from the 1983 estimate to accommodate inflation, loan servicing fees and some anticipated interim financing costs. The budget also reflects all administrative costs, engineering contingency, land acquisition, and legal costs associated with a large construction project. Grant and loan commitments have been secured for the total cost except for $60,000 of the DNRC grant contribution approved by the 1983 Legislature. The $100,000 DNRC loan authority will also need to be authorized to be used during the FY 1986-87 biennium.

The establishment of the Antelope Water and Sewer District was approved by election and a debt authorization for $200,000 was approved in a December 1984 election.

ENVIRONMENTAL IMPACT ASSESSMENT:

This project will provide positive environmental impacts by eliminating pumping of septic tanks onto the surface and seepage of sewage into the groundwater.

SUMMARY OF PUBLIC BENEFITS:

The benefits from this project will include disease prevention and improved water quality.

RECOMMENDATION:

The Department recommends a $60,000 grant and a renewal of the $100,000 loan authority for Antelope.

APPLICANT NAME: Daniels County Conservation District

PROJECT/ACTIVITY NAME: Poplar River Monitoring Program

AMOUNT REQUESTED: $99,173 Grant

TOTAL PROJECT COST: $149,398

AMOUNT RECOMMENDED: $ 99,000 Grant

PROJECT DESCRIPTION:

The Daniels County Conservation District requests a $99,173 grant to monitor the water quality in the Poplar River basin to determine the environmental impacts and trends occurring in the United States from coal mining and power generation in Saskatchewan just north of the international boundary. Water from the East Poplar River is presently used for domestic, irrigation and stockwatering purposes. Scobey draws water from alluvial wells recharged from the Poplar River. The monitoring program will alert water users of problems caused by the power plant and mining activities in Canada. Short- and long-term trends can be documented for purposes of litigation. The coal mining began in 1980 and the generation facilities went on line in 1981 and 1983. An international water quality board recommended that monitoring activities take place in Canada and the U.S. to assess impacts and problems associated with the development such as increased boron, total dissolved solids and mercury levels, fly ash groundwater contamination, dewatering, and saline seep. A Bilateral Monitoring Committee was established to coordinate the monitoring, but each country was to fund its own monitoring programs. In the U.S. the EPA funded the initial monitoring, and the Montana Coal Board and U.S. Geological Survey provided funds last year. Funding for 1985-87 will be provided by this grant, U.S. Geological Survey, and Montana Bureau of Mines and Geology. Future contributions to the program are unknown.

Grant funds will be used to drill test wells, conduct aquifer pump tests, collect samples and prepare a final report. This information will be made available to Montana irrigators, the International Joint Commission, the Bilateral Claims Commission, and the governments of the United States, Canada and the State of Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

While monitoring will not solve contamination problems, it will provide scientific information and evidence to prove harm in cases of litigation, and it will help to support objections to further development of the coal mine area if necessary. Also, long-term monitoring will provide information to aid in identifying problems as early as possible and will underlie remedial and long-term corrective action.

The selected monitoring alternatives are well founded, appropriate, and technically feasible for a two-year monitoring program. However, unless a commitment to long-term monitoring of the area is made, the data generated from this project will be of little use.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this two-year monitoring program is $149,398 with the USGS providing $30,900 in matching funds, and the MBMG providing $19,325. The remaining $99,173 will be provided by the grant. Of the $99,173, $43,192 is for professional salaries, $21,625 for travel and supplies, $28,742 for chemical analyses, and $5,614 for contingency. Cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

While this monitoring program will not resolve potential adverse environmental impacts from the coal mining and generating operation, it will provide data for early detection of surface and groundwater contamination. The use of this data will aid in preventing water quality degradation and therefore will provide positive long-term environmental impacts. No adverse impacts will result from this monitoring project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project may include the prevention of water quality degradation due to the impacts from the coal mining application. As a result, domestic and agricultural water supplies may be protected along with fish and wildlife habitat.

RECOMMENDATION:

DNRC recommends a grant of $99,000. A long-term funding source other than Water Development or Renewable Resource Development programs needs to be secured for this project.

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APPLICANT NAME: Town of Cascade, Montana

PROJECT/ACTIVITY NAME: Park Development of Riverside Abandoned Landfill

AMOUNT REQUESTED: $100,000 Grant

TOTAL PROJECT COST: $110,300

AMOUNT RECOMMENDED: $ 44,000 Grant, $ 66,000 Loan

PROJECT DESCRIPTION:

The Town of Cascade proposes to stabilize and reclaim their old abandoned landfill site located on the banks of the Missouri River, and to develop the area into a community park providing various recreation facilities. These facilities include a launching site for larger boats than can be accommodated by two upstream Montana Department of Fish, Wildlife and Parks launching sites, and picnic and restroom facilities. Cascade hopes to improve its economy by attracting boaters and fishing recreationalists to this facility as a takeout point and picnic area. The project would involve reshaping the site, seeding with a dryland grass mix, landscaping with trees, and providing recreation facilities.

The Solid Waste Management Bureau, Montana Department of Health and Environmental Sciences required the abandonment of the Cascade landfill because of environmental hazards associated with its operation and its location on the banks of the Missouri River. Due to a shortage of funds, the landfill site has only been partially reclaimed and continues to be an environmental hazard by affecting ground and surface water quality as well as being aesthetically unpleasant.

The Town of Cascade was offered a $41,000 grant and a $59,000 loan by the 1983 Legislature. The community indicated it was not financially able to afford the loan; because of declining coal tax revenues, the grant money was not available.

TECHNICAL FEASIBILITY ASSESSMENT:

No detailed plans for the proposed project have been submitted since the proposal is for design as well as construction. It does not appear that unusual technological problems will be encountered.

The major portion of the site where improvements are proposed is above the Missouri River floodplain. The septic tank and treatment field will be located and designed to meet Cascade County Health Department

regulations. The restrooms will be used only during the warmer months of the year. The town water supply will serve as the water source for this facility. It will be turned off and the waterline drained during the winter months of non-use. Personnel from the Montana Department of Fish, Wildlife and Parks, the Corps of Engineers, and Cascade County Health Department have all indicated they believe Cascade will be able to obtain the necessary 124, 404 and septic system permits.

As is specified, only dryland grass species should be used in the reclamation of the landfill, as irrigation of the area could cause significant leachate problems.

FINANCIAL FEASIBILITY ASSESSMENT:

Cascade has requested 100% funding for this project since a local government contribution of $10,300 originally targeted for this project in 1982 had to be spent on a solid waste transfer station. The total cost for this project is estimated to be $110,300. Of this amount, $18,400 is budgeted for engineering, administration, legal fees and contingency. The remaining $91,900 is for construction and materials. Of the $91,900, $15,000 is for the boat ramp, and $20,000 for the restroom facilities. The cost estimate appears reasonable.

This project could be phased with 40% funding ($44,120) providing landfill reclamation and preliminary park improvements such as grass seeding, trees, fireplace grills, trash containers and access roads.

ENVIRONMENTAL IMPACT ASSESSMENT:

This project will provide long-term positive environmental impacts by protecting the surface and groundwater quality of the Missouri River from pollutants leaching from the abandoned landfill. Long-term negative environmental impacts to the Missouri River and the groundwater resource are likely to occur without the reclamation of the landfill. Short-term negative effects during construction will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will be in the form of prevention of disease, and improving domestic and agricultural water quality by preventing contamination from leachate. Erosion along the river bank will be controlled, improving fish and wildlife habitat. Recreational opportunities from the boat ramp and park will be enhanced, providing new business and employment opportunities. The currently abandoned landfill site will be used, conserving the land resource, and a severe environmental problem will be solved.

RECOMMENDATION:

DNRC recommends a $44,000 grant to be used for landfill reclamation and preliminary park development. The remaining $66,000 will be offered as a loan to the community.

APPLICANT NAME: Sheridan County Conservation District

PROJECT/ACTIVITY NAME: Northeast Montana Groundwater Study—Final Phase

AMOUNT REQUESTED: $100,000 Grant

TOTAL PROJECT COST: $581,594

AMOUNT RECOMMENDED: $ 75,000 Grant

PROJECT DESCRIPTION:

The groundwater resource in northeast Montana is believed to have strong potential for use as an irrigation source. Increased irrigation development, interest in future development, and lack of knowledge of the groundwater resource in this area prompted the initiation of the Northeastern Montana Groundwater Study in 1982. The Glasgow Water Rights Office has received over 30 applications for permits to develop wells in the area. They are postponing issuing these permits until the results of the study are available. Phase I of the study provided a summary of information on the aquifers in the area and their potential for water supply. Phase II began a data collection program and Phase III now in progress is providing information on the shallow outwash aquifer (the aquifer most utilized throughout the area) and data on the extent, depth and thickness of the deeper channel aquifer. The final phase proposal by the Sheridan County Conservation District will provide productivity recharge and water quality information on the deeper ancestral Missouri River Channel aquifer and will determine its relationship to the shallow aquifer.

Specific activities within this final phase include the installation of high yield test wells followed by testing and sampling. Data will be analyzed and final study results produced. These final products will include a detailed desk top model of the aquifer, maps and reports which will provide information regarding production of water sources for irrigation and water supplies, and data to address interstate and international water rights and use issues. The final product information may also be used in developing a water reservation for the area. This information will be made available to farmers and ranchers and water users in northeastern Montana, Soil Conservation Service, Fish and Wildlife Service, Agricultural Extension Service, Bureau of Indian Affairs, Conservation Districts, and the Department of Natural Resources and Conservation.

Contributors to the entire groundwater study project include local private individuals, Montana Bureau of Mines and Geology, U.S. Geological Survey, Bureau of Indian Affairs, and the Conservation Districts Division of the Department of Natural Resources and Conservation. The project also received $250,000 in water development and RIT grant funds from the 1983 Legislature.

TECHNICAL FEASIBILITY ASSESSMENT:

The methodologies selected to test the productivity of the deeper aquifer are technically adequate. However, information generated from phase III of the project is essential in determining if this deeper aquifer will be an accessible, available and feasible water source to utilize.

Information from this final phase which helps define the relationship of the two aquifer systems will be valuable in determining the effects that development of one will have on the other. In particular, since the shallow aquifer provides the water source for the National Wildlife Refuge, information on how either aquifer affects the water level will be important. In addition, if the now untapped deeper aquifer is developed, it is critical to know its impact on the heavily used shallow aquifer. Water rights permitting decisions are awaiting the outcome of the study.

Because previous development of the groundwater source has been in the shallow outwash aquifer, interstate controversy with North Dakota is more likely to occur over increased development of this aquifer than over the deep ancestral channel. However, development of this deep aquifer could intensify the need for developing an interstate management plan for the area.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the entire Northeast Montana Groundwater Study is estimated to be $581,594. The phase this proposal covers will cost $115,000 with U.S. Geological Survey providing $15,000 for aquifer tests and model construction. The $100,000 grant request will cover well installation at $54,000; $20,000 is for salaries, overhead and travel, $11,000 for supplies and equipment, and $15,000 is for aquifer tests and model construction. Cost estimates appear reasonable.

The total $581,594 may not be adequate to provide all the information pertinent to developing a water reservation for the area, but it will provide a substantial amount of useful information including a final predictive model.

Without these grant funds to cover this final phase, the benefits received from previous funds contributed to the projects will be reduced.

The following chart depicts past agency funding contributions to the Northeast Montana Groundwater Study:

	Past Funding Contributions	Final Phase Funding Request
MBMG	45,094	
USGS	36,500	15,000
BIA	100,000	
DNRC; WD Grant	100,000	100,000
DNRC; RIT Grant	150,000	
DNRC; 223 Funds	35,000	
	466,594	115,000
	TPC =	581,594

ENVIRONMENTAL IMPACT ASSESSMENT:

Continued development of groundwater sources without information generated by the Northeastern Montana Groundwater Study could result in long- and short-term negative environmental effects from depletion of the water source. Domestic and agricultural water supplies could be affected as well as the National Wildlife Refuge lakes. Information from the groundwater study will provide a tool for managing the aquifer, preventing adverse effects to the environment and resulting in positive impacts.

Some negative environmental impacts may occur during well drilling, but they will be short-term and minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from the completion of the Northeastern Montana Groundwater Study will include improving domestic and agricultural water supply by identifying the capabilities for development of the groundwater aquifer. As a result the groundwater resource may be more available for agricultural and domestic use, and may be conserved. Fish and wildlife habitat on the National Wildlife Refuge will be protected by insuring that water is not depleted from the aquifer. If the aquifer is capable of withstanding further development, new agricultural business and employment opportunities will be enhanced.

RECOMMENDATION:

DNRC recommends a grant of $75,000 to complete the final phase of this project. Project results should be useful and usable to a number of agencies and individuals as they coordinate their management of this aquifer. The remaining 25,000 for this phase should be solicited from other agencies who will benefit from this study.

APPLICANT NAME: Treasure County Conservation District

PROJECT/ACTIVITY NAME: Irrigation System Reorganization

AMOUNT REQUESTED: $17,160 Grant

TOTAL PROJECT COST: $72,545

AMOUNT RECOMMENDED: $17,000 Grant

PROJECT DESCRIPTION:

This project is a total irrigation management plan for a district cooperator on a 260-acre parcel where water shortages and poor irrigation methods exist. The project consists of:

1. Replacing 2-1/2 miles of open ditch that carries 1/2 cfs with 4,000 feet of buried pipe capable of carrying 6 cfs;
2. Replacing 2000 feet of open field ditches with 900 feet of underground pipe;
3. Replacing open ditches and siphons with gated pipe covering 120 acres; and
4. Land leveling and the establishment of graded borders on 80 acres.

TECHNICAL FEASIBILITY ASSESSMENT:

The acreage is short of water and has a poor water distribution system. The project plan will correct the problems and provide for a sufficient water supply and efficient method of irrigation. The design and plan has been made by the local SCS and technical feasibility established. Construction will be monitored and approval certified by the SCS.

FINANCIAL FEASIBILITY ASSESSMENT:

This project is being implemented on land where water shortages and poor irrigation methods exist. Current production is estimated at one ton of alfalfa hay per acre. With the completed project, yields are expected to increase to five tons per acre. Assuming alfalfa hay priced at $60 per ton and cost of production at $25 per ton, net increase will be $36,400. If a total loan ($72,545) was acquired at 10 percent interest over 20 years, the project would still have a positive cash flow in excess of $20,000. Development cost per acre is $280, which is in the range of normal irrigation development costs. All costs given are from the SCS average costs list.

Additional funds needed to complete the project will be acquired through ACP cost-share and from the cooperator.

ENVIRONMENTAL IMPACT ASSESSMENT:

A minor amount of negative environmental impact will occur during construction through the placement of a pump site adjacent to the river. Favorable environmental impacts will occur through better vegetative cover, water conservation, and erosion control. A study will also be made at the pump site of screen sizes effective for protection of fish life and also capable of delivering an adequate supply of water.

SUMMARY OF PUBLIC BENEFITS:

Direct benefit to the public is low, as the project only involves one family farm. Secondary benefits are the beneficial use and conservation of water and soils. The Soil Conservation Service and County Extension agent will monitor the project for use in demonstration and education.

RECOMMENDATION:

This request addresses the entire scope of water management on an individual farm. DNRC recommends a grant of $17,000 for the project.

APPLICANT NAME: Town of Saco

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $200,000 grant

TOTAL PROJECT COST: $700,000

AMOUNT RECOMMENDED: $41,800 grant, $158,200 loan

PROJECT DESCRIPTION:

Saco presently has a population of 250. The existing water system consists of two shallow wells (infiltration galleries) located about three miles northwest of Saco, a main transmission line, a well in town, two cisterns with a total capacity of 50,000 gallons, a 50,000-gallon elevated storage tank, a booster pump station, and several thousand feet of distribution line. The two shallow wells collect seepage water from an irrigation delivery canal from nearby Nelson Reservoir. The wells have a variable production throughout the irrigation season and produce no water during the non-irrigation season. In addition, the two wells are subject to contamination by toxic blue-green algae since Nelson Reservoir periodically experiences blooms of blue-green algae. The main transmission line from the shallow wells into Saco is old, badly deteriorated wood stave pipe. The pipe leaks excessively and is also subject to contamination from numerous sources. The well located in Saco produces only 67 gallons per minute (gpm) and is unpalatable due to high levels of hydrogen sulfide gas in the water.

Numerous other water system deficiencies exist in Saco, including many defective water meters, several lead water pipes and a deteriorating elevated steel storage tank. Saco is without a dependable, safe and palatable source of drinking water and has a water system with several other deficiencies.

The proposed project consists of design and construction of the following water system improvements: development of two, 150-gpm wells located approximately 5-1/2 miles north of Saco (near the Milk River), installation of 29,000 feet of 6-inch main transmission line from the new wells into Saco, installation of 10 new control (gate) valves in the distribution system, replacement of 159 defective water meters, replacement of 30 lead service connections and repair of the 50,000-gallon elevated storage tank. The two shallow wells and old wooden transmission line used presently would be abandoned. The well located in town would be used on a standby basis.

TECHNICAL FEASIBILITY ASSESSMENT:

Preliminary engineering has been completed on this project. The nature of the problems with the Saco water system and the difficulty in finding adequate amounts of palatable water in the area made consideration of numerous alternatives inappropriate. The nearest proven source of palatable groundwater in the area is located north of Saco near the Milk River, where the proposed new well field is located. There appears to be no reasonable alternative to the other water system improvements proposed. A detailed cost estimate of the proposed improvements has been developed.

The design of all proposed improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB agrees with the need for the project and supports the proposed improvements. In 1980 the WQB warned the town of possible blue-green algae contamination of their two shallow wells and recommended that the town stop using the wells until the algae bloom season had passed. The proposed improvements are appropriate and the project is technically feasible. The project should produce the desired effects.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $700,000 of which $608,830 are costs of construction and contingencies and the balance is engineering, legal, administration and interest. The application is for a grant of $200,000. The applicant has indicated a willingness to accept a grant of less than requested and a loan, if necessary, for up to 100% of the grant request, in order to insure timely completion of the project. The estimated project costs appear to be realistic and reasonable and it appears as though the most cost effective alternatives were chosen.

The sources of funding of this project are the DNRC water development program loan and grant funds and the Community Development Block Grant (CDBG) program grant funds. Saco has applied for a CDBG grant of $500,000 to aid in financing this project. The town has also applied to Farmers Home Administration (FmHA) for loan/grant funds to insure that the project can be undertaken even if the CDBG application is unsuccessful.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with municipal utility construction projects. A crossing of a main irrigation canal will be required but the crossing can be accomplished without adversely affecting water quality and/or the operation of the canal. This project will eliminate Saco's dependence on a source that may be unsafe, thereby eliminating a potential hazard to public health.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Saco. The major benefits will be prevention of property damage, personal injury (by providing an adequate water source for fire fighting), prevention of disease (elimination of dependence on the two unprotected shallow wells and the deteriorated wooden main transmission line into town), increasing and improving the domestic water supply (new wells that produce water of acceptable quality and quantity), resource conservation (elimination of leakage and replacement of faulty water meters) and improving agricultural water supply (the new supply system will also supply water to three farmsteads).

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $41,800 and a loan of $158,200 contingent upon Saco passing the necessary bond issue, and securing a CDBG grant and/or other funding assistance. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

APPLICANT NAME: Private Water Users Association

PROJECT/ACTIVITY NAME: Weed and Moss Catcher Construction and Installation

AMOUNT REQUESTED: $ 30,000 Grant and $90,000 Loan

TOTAL PROJECT COST: $120,000

AMOUNT RECOMMENDED: $ 20,000 Grant and $100,000 Loan

PROJECT DESCRIPTION:

A river in southeastern Montana was historically a slow moving river carrying a lot of silt. The suspended particles did not let light through, so moss and weeds did not grow in the river. After the completion of a dam, the river became clear; now because of year-round warm water temperatures and a river bottom lined with silt, heavy moss and weed growth occurs. This growth flows into irrigation canals, on into field pipes and irrigation tubes causing poor distribution of water and requiring many hours of manual labor that results in inefficient farming operations. This project is to build and install a self-cleaning weed and moss catcher in the canal at a strategic point to eliminate as much of the debris as possible. The project sponsor is a private nonprofit corporation.

TECHNICAL FEASIBILITY ASSESSMENT:

It is necessary to overcome the inefficient use of water and labor by the 242 families irrigating 20,510 acres of land from the canal. Other alternatives were considered such as small independent units for each turn-out, and periodic poisoning and surging of the river. The most cost-effective and technically feasible method is the large unit which will be built locally from designs proven in other areas.

FINANCIAL FEASIBILITY ASSESSMENT:

Cost effectiveness of this type of unit has been demonstrated. The association is financially sound having an adequate net worth and no large debt. Repayment of any loan will be through assessments levied against the share holders. Current assessments are $5.00 per acre foot of water which is low. Any new assessment to cover this loan will not create hardships. Collection of assessments is not a problem; deliquincy is approximately 2% through the year.

Security for the loan has been offered in real estate to meet our requirements.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts from this project. Construction will require little excavation and what is required will be inside the canal. The benefits will occur from improved water quality through the system and efficient use of water to maintain soil quality.

SUMMARY OF PUBLIC BENEFITS:

Direct benefits will be to the 248 families that use water from the canal. These benefits specifically affect the 20,510 irrigated acres served by the canal. Indirect benefits of water quality improvement, improved spendable income and maintenance of soil quality will be felt in the local community of 3,300 people and county of 11,350.

RECOMMENDATION:

ONRC recommends that this project be funded through a grant of $20,000 and a loan of $100,000.

APPLICANT NAME: Box Elder Water District (RID #1)

PROJECT/ACTIVITY NAME: Box Elder Well Development

AMOUNT REQUESTED: $100,000

TOTAL PROJECT COST: $170,000

AMOUNT RECOMMENDED: $28,000 grant and $142,000 loan

PROJECT DESCRIPTION:

The Box Elder Water District proposes a rural water system to serve 22 ranches in an area that experiences cyclical drought. In average years, residents must haul water 40 miles from Ekalaka for domestic use; and in drought years, water must also be hauled for stock use. Because of the deep Pierre shale formation, it is not economical for ranchers to obtain water by drilling individual water wells. The Box Elder group has drilled one unsuccessful test well and, since then, has been working with the Soil Conservation Service (SCS) and the Montana Bureau of Mines and Geology to investigate the possibility of drilling a deep well to supply this system.

The district proposes to drill a deep well (2,600 feet) into the Lakota formation south of the project site. The quality of water from this well should be adequate for stock use and for many household uses; however, home distillation may be required for cooking and drinking. Pumping to 200 feet will be required and water storage will be located at the well site.

Drilling into the Lakota formation at the indicated site will be somewhat risky since the water's quality and quantity cannot be predicted accurately. However, this project would result in considerable savings compared to other alternatives.

The delivery system will include 64 miles of polyvinylchloride (PVC) pipe buried at least 6 feet deep and varying in diameter from 1-1/2 to 5 inches.

The Box Elder group has formed a rural improvement district known as the Box Elder Water District to manage the project.

TECHNICAL FEASIBILITY ASSESSMENT:

In its report on the proposed project, the Soil Conservation Service (SCS) stated that there are a number of significant risks involved in developing a water supply from the Lakota formation, largely because of the lack of field information on the characteristics of the aquifer in this area. Since the limited amount of available field information is from a considerable distance away from the project site, the assessments of water quantity and quality rest more on professional judgement than an interpolation of the record. If, when the well is drilled, the only water quality problem encountered is high total dissolved solids (TDS), this source probably will receive Water Quality Bureau approval. However, if the water exceeds the standards for a primary contaminant, such as flouride, this source would not be approved without a treatment system that removed the contaminant.

The Fox Hill Sands aquifer is well documented in this area; it provides water of considerably better quality than the Lakota formation. Unfortunately, a rural system using water from the Fox Hill Sands aquifer would be more expensive.

The development of a well in the Lakota formation will be expensive and risky. Even with the well in place and an adequate water supply, water will not be available to residents until a delivery system is built. An analysis of delivery system alternatives should be conducted prior to selecting a test well location.

In order to have water available to fill tank trucks at the well site using the Lakota formation, the cost is about $170,280. This estimate is based on the assumption that there is ready access to the site. Since the water quantity from the well may be marginal and the use estimates extremely low (30 gpcd), there is a significant chance that a second production well would have to be developed.

The cost of two production wells at the site is about $285,540. It would cost about $91,140 to have tank trucks at another site (Chalk Buttes). Since the Chalk Buttes site is a considerable distance outside the project area, it is probably not much improvement over hauling water from Ekalaka. If Chalk Buttes water were transported via pipeline to a storage reservoir at a convenient point in the project area, the cost would be about $229,391. Although the long-term costs for a successful Lakota well probably would be less, it is evident that there may not be a great deal of difference between providing Lakota water for use at the well site and transporting Fox Hills water into the project area for similar use. There are advantages to a Fox Hills well; the existence of water there is much better documented and it is of significantly higher quality. Even so, the capital costs for water from Chalk Buttes water would be slightly higher.

FINANCIAL FEASIBILITY ASSESSMENT:

Primary benefits from the project are received by the estimated 22 users of the proposed rural water system. These benefits include: possible prevention of health-related problems, correction of water quality problems, water resource availability for domestic and livestock uses, and an improved quality of life.

Providing funding for this project represents a certain degree of risk in that the result will be based on the nature of quality and quantity of water discovered. Information suggests that water from the proposed location may be of marginal quality or less than adequate quantity.

The grant request is for only a portion of the estimated total funds needed to supply direct water to each residence. Providing only the well will not totally eliminate hauling and other costs. In some cases, the actual costs to the users may be approximately equal to current costs, if a loan repayment is required. Actual cost reductions resulting from the well only are not quantifiable.

ENVIRONMENTAL IMPACT ASSESSMENT:

Drilling a test well will have minor short-term environmental impacts.

RECOMMENDATION:

The development of a water system is necessary to allow continued ranching operations in the area. Although further coordination with the Department is necessary prior to the final selection of a source, DNRC recommends that a grant be provided for a test/production well.

DNRC recommends a grant of $28,000 and a loan of $142,000 for development of a test/production well. The total of Water Development and Renewable Resource Development program grant funds received in the 1983-1984 and 1984-1985 bienniums shall not exceed $100,000. The grant should be made to Carter County for administration to the Box Elder Water District (RID #1).

The Water District shall assess the risk and cost differences between developing a well and distribution system originating in the Lakota aquifer and one originating in the Fox Hills aquifer. The test well location shall be approved by the Department.

APPLICANT NAME: Sheridan County (for Reserve Sewer District)

PROJECT/ACTIVITY NAME: Sewer System for Community of Reserve

AMOUNT REQUESTED: $100,000 grant, $50,000 loan

TOTAL PROJECT COST: $404,700

AMOUNT RECOMMENDED: $33,000 grant, $117,000 loan

PROJECT DESCRIPTION:

The unincorporated community of Reserve, located in Sheridan County, presently has no central sewage collection system or sewage treatment facilities and residents provide their own sewage disposal facilities. Because soils in the area are essentially unsuitable for conventional drainfield systems, most residents merely provide a septic tank that overflows directly to either Big Muddy Creek or one of the small collector systems that discharges to Big Muddy Creek. There are presently 39 residences in Reserve; the estimated total population is about 80 people.

Because of the water pollution effects and health risks caused by the inadequate and unacceptable sewage disposal methods utilized by residents of the community of Reserve, the community has been ordered by EPA and the State Department of Health and Environmental Sciences to install an adequate sewage collection and treatment (disposal) system. EPA and Sheridan County have funded an EPA Facilities Plan, which is a comprehensive preliminary engineering study, to be completed in the fall of 1984. Upon completion of the facilities plan a public agency called Reserve Sewer District will be created to handle the upgrading project and operate and maintain the completed facilities.

This project consists of design and construction of a complete sewage collection system and disposal facilities. The system will collect septic tank effluent in small diameter pipe and pump the collected septic tank effluent to a properly designed and located community subsurface soil absorption system. Although the facilities plan is not yet completed, the engineers "best estimate" of the alternative that will ultimately be chosen is as follows: 4,350 feet of 6-inch gravity sewer line, 2,000 feet of 4-inch sewer service line, 12 manholes, 21 septic tanks, lift station and 3,100 feet of 4-inch force main, and a "Wisconsin Mound" type, raised bed drainfield.

TECHNICAL FEASIBILITY ASSESSMENT:

In the required facilities plan, several appropriate alternative solutions to Reserve's sewage treatment problems will be studied and the most cost effective solution will be selected. At this time, however, the alternative of small diameter collection of septic tank effluent and transport to a community raised bed soil absorption field for disposal appears to be the alternative that will be found most cost effective. It certainly is a technically feasible alternative and would solve Reserve's present sewage disposal problems.

The facilities plan and design of all improvements will be reviewed and approved by the WQB prior to commencement of construction. The WQB supports and concurs with the need for the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $404,700 of which $326,210 is the cost of construction and contingencies and the balance is engineering, administration, financing and legal. The facilities plan will cost an estimated $15,000 and will be funded by the EPA and Sheridan County. The total project cost does not include the cost of the facilities plan. The application is for a grant of $100,000 and a loan of $50,000, the combined total of which amounts to the estimated project design and construction cost not funded by an EPA grant. The County has indicated that a grant of less than requested and a proportionately larger loan, if necessary, would be considered in order to insure a timely completion of the project.

The district to be formed will be able to issue revenue bonds, upon approval of the voters within the district. Such bonds would be used to cover the local share of project costs (DNRC amount). The estimated costs appear to be realistic and reasonable and the chosen alternative solution will be the most cost effective alternative.

ENVIRONMENTAL IMPACT ASSESSMENT:

No significant adverse environmental impacts are anticipated with this project. Only the unavoidable, short-term impacts typically associated with similar municipal utility construction projects are expected. This project should enhance the environment by eliminating the serious public health hazard and water pollution problem created by failed individual sewage disposal systems.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of the district. The major public benefits of the project are as follows: elimination of a public health hazard, prevention of disease, and elimination of a source of pollution of Big Muddy Creek, thus improving water quality.

RECOMMENDATION:

The DNRC recommends a grant of $33,000 and a loan of $117,000 contingent upon formation of a county water and sewer district and passing the necessary bond issue. The recommended grant/loan funding is also conditional upon receipt of an EPA construction grant on the project. Any reduction in scope should result in a proportionately smaller grant, and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Private Ditch Company

PROJECT/ACTIVITY NAME: Gravity Irrigation Feasibility Study

AMOUNT REQUESTED: $35,000 grant

TOTAL PROJECT COST: $35,000

AMOUNT RECOMMENDED: $ 6,000 Grant and $29,000 Loan

PROJECT DESCRIPTION:

A private nonprofit ditch company in Montana currently has approximately 1,400 acres under irrigation of which 780 acres are pump sprinkler irrigated. The company consists of 21 shareholders who operate as family farms. These shareholders desire to place the entire system under gravity flow sprinkler irrigation and expand the area of irrigatinn to an approximate total of 2,400 acres. This project is a proposed study to determine need, use, design, water requirements, etc., necessary to complete an application to the Bureau of Reclamation Small Projects Loan Program for construction loan funds.

TECHNICAL FEASIBILITY ASSESSMENT:

The study is technically feasible as there is water for irrigation and suitable lands to irrigate. Some preliminary investigations on the proposed project made by a consulting engineering firm indicate the gravity irrigation system would be technically feasible.

FINANCIAL FEASIBILITY ASSESSMENT:

The consulting engineering firm has estimated the cost of the complete study necessary to make application to the Bureau of Reclamation for the construction loan would be $35,000. An estimated construction budget presented by the applicant shows a total cost of $2,320,000 with contributions estimated at $396,000 resulting in a loan request of $1,924,000. Based on 2,400 acres being put into the project, loan cost is $801 per acre, an extremely high development cost. Gross savings and increased income are projected at $161,000, which would repay a 6.7 percent loan in 25 years.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study will create no impacts on the environment.

SUMMARY OF PUBLIC BENEFITS:

The study will have direct benefits to the 21 family farms served by the company. The construction project if implemented would result in water conservation, better soil management and increased economic conditions in a community of 1,000 people.

RECOMMENDATION:

Private applicants are limited to a percentage of project cost for grant funds. Primary benefits from this project are to users of the system. DNRC recommends a grant of $6,000 and a loan of $29,000 for this project.

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APPLICANT NAME: Montana Department of Fish, Wildlife and Parks

PROJECT/ACTIVITY NAME: Gartside Dam Rehabilitation

AMOUNT REQUESTED: $403,200

TOTAL PROJECT COST: $453,200

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

Gartside Dam is an earthfill facility located on Crane Creek 10 miles southwest of Sidney in Richland County. The project is owned and operated by the Department of Fish, Wildlife and Parks (DFWP) and has been used primarily for recreation. The embankment impounds 236 acre-feet of water with a surface area of 36 acres. The dam has been repaired and raised a series of times since the early 1900's.

The U.S. Army Corps of Engineers identified major dam safety issues and questions in their November 1980 evaluation of Gartside Dam. In 1982 a large depression formed around the water outlet structure causing major concern over the stability of the embankment. Engineers recommended that water levels in the reservoir be kept at a minimum until repairs are made.

DFWP obtained a $100,000 grant from the Water Development Program to initiate rehabilitation of the dam. An engineering consultant has analyzed the improvement alternatives and a final option has been selected. The engineer is currently preparing construction plans and specifications so construction can begin if and when funds are acquired. DFWP has requested $403,200 in grant funds to complete the construction.

TECHNICAL FEASIBILITY ASSESSMENT:

The project engineer has completed an analysis to identify the rehabilitation needs for Gartside Dam. The rehabilitation needs are: to control seepage, increase stability of the downstream face, provide upstream slope protection, replace the outlet structure and upgrade the auxiliary spillway to pass one-half of the probable maximum flood. Each element is considered important to the rehabilitation and should be constructed under the same project. Phased construction could increase costs and result in a longer period during which safety and stability problems could develop. DPWP has no plan for phasing the construction project.

The construction alternative selected appears to satisfy the rehabilitation needs. The cost estimate is adequate for consideration of construction funding.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed construction project is estimated to cost $453,200. DPWP has requested $403,200 in grant funds and plans to contribute $50,000 for land acquisition. Repayment capability for a loan or other sources of grant funds have not been secured at this time.

ENVIRONMENTAL IMPACT ASSESSMENT:

The construction impacts associated with the dam rehabilitation will include: short-term decreased water quality to Crane Creek, lost vegetation in borrow areas and typical noise and air quality reduction during construction. Most impacts should occur within the existing project area. Final impacts should be assessed and all permits acquired during the design phase.

Completion of the project will enhance recreation, fish and waterfowl in the area.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will primarily benefit residents in the Sidney-Fairview-Glendive area. Rehabilitation of the dam will remove the life and property loss hazard attributed to the unsafe dam. Major benefits include fish and wildlife enhancement; provision of recreational opportunities; improved water quality; and preservation of an agricultural water supply.

Over 25,000 recreational visits were received between May and September of 1981.

RECOMMENDATION:

DNRC recommends a grant of $100,000 for rehabilitation of Gartside Dam. Any reduction in the scope of the proposed project shall result in a proportional decrease in grant funds.

APPLICANT NAME: Butte Silver Bow Government

PROJECT/ACTIVITY NAME: Butte Metro Sewer Sludge Application and Plant Trials

AMOUNT REQUESTED: $ 88,981 Grant

TOTAL PROJECT COST: $125,766

AMOUNT RECOMMENDED: $ 82,000 Grant

PROJECT DESCRIPTION:

The Butte-Silver Bow government and the Mile High Conservation District propose to demonstrate the feasibility of using a high metal content municipal sludge for increased forage production on cropland, while minimizing soil and groundwater pollution.

The Butte-Silver Bow Metro Wastewater Treatment Plant produces 12 million gallons of sludge per year that contains approximately 60,000 pounds of nitrogen, 38,000 pounds of phosphorus, 1,980 pounds of copper, 2,532 pounds of zinc, 91 pounds of lead, and 17 pounds of cadmium. The sludge is presently disposed on 60 acres of city-owned land at such high loading rates that groundwater contamination and surface soil sterilization is imminent. Increased nitrate and dissolved solids have been detected in the groundwater and the levels are expected to increase. At present loading rates, the EPA recommended maximum copper concentration in the surface soils will be exceeded in four years. An adjacent family farm has experienced several crop failures on their land from excessive sludge loading. They are reluctant to accept more sludge without demonstrated success. The state health authorities are pressing Butte-Silver Bow to change to an environmentally acceptable method of sludge utilization.

The demonstration project is designed to indicate the optimum forage crop, irrigation rate, sludge application rate, and soil conditioning required to maximize forage production and nutrient uptake while minimizing heavy-metal movement into plants and groundwater. Eleven forage grasses and two feed grains will be tested on 30 half-acre plots with four sludge application rates under irrigated and dryland conditions. The sludge, irrigation water, soil, groundwater, and forage tissue will be monitored for management of nutrients and heavy metals. Approximately 15 acres of family ranchland will be cleared of sagebrush, tilled, pH corrected by lime application, injected with sludge, and prepared for seeding. Two groundwater monitoring wells will be installed to supplement six existing wells. To reduce project costs, a hand-set irrigation system will be used for irrigating with sludge pond supernatant water and, later in the season, treatment plant effluent. Forage yields will be determined.

Land preparation and most farming operations (except irrigation) will be done by Butte-Silver Bow employees and family ranch members. A full-time graduate student with suitable qualifications will monitor the seeding, sludge application, and harvest operations. The student will be responsible for irrigation, for monitoring heavy-metal and nutrient inputs and outputs, and for yield measurements. The student will be advised and assisted by Butte-Silver Bow, family farm members, Montana Bureau of Mines and Geology, SCS, and the university unit attended.

A final report containing the results of the demonstration will be made available to other communities in the state seeking alternative solutions of sludge disposal.

TECHNICAL FEASIBILITY ASSESSMENT:

Soil infiltration and sludge and groundwater monitoring data have been collected. Experienced University personnel as well as personnel from the SCS, and MBMG have been and will be involved with the design and monitoring of the project. The Solid Waste Management Bureau of the Montana Department of Health and Environmental Sciences will regulate and control the project throughout its entirety.

This cropland application of the sludge is the preferred alternative over application at airport and park facilities, use in tailings, reclamation, disposal at a landfill, or sale as a soil conditioner because of odor and health concerns, low cost effectiveness, and the potential for groundwater contamination.

While sludge application projects have occurred in other places in the United States, this is an innovative approach for use in Montana where heavy metal concentrations are so excessive and the weather and growing season unique. A smaller scaled project of sewer sludge land application is ongoing in Helena. The two projects are different in their approaches, and together will provide a greater variety of information for other Montana communities interested in trying land applications of sludge.

FINANCIAL FEASIBILITY ASSESSMENT

The total cost of this project is $125,766 with Butte-Silver Bow providing $26,083 for contract administration and labor. The SCS will provide $7,169 for services of an environmental engineer and soil scientists. The landowner will provide $2,783 for 50% of the labor cost. The MBMG will provide $750 for equipment, and the grant contribution of $88,981 will cover personnel costs for a plot attendant and research assistant at $20,000 and laboratory supplies, equipment, printing, analysis, contingency and other costs at $63,945. All costs appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

If current sewer sludge disposal methods in Silver Bow County continue, groundwater resources in the area are likely to become contaminated with heavy metals — a severe adverse impact to the environment. This project proposes to identify a positive long-term environmentally sound solution to this problem through use of the sludge as a resource, while eliminating the threat to groundwater. No adverse environmental impacts are anticipated from this project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project if it is proven successful will be the prevention of disease by removing the present threat to groundwater quality, solving an identified problem of safe sludge disposal, improving land and water quality by using the sludge as a resource and preventing groundwater contamination. Nutrients and water within the sludge will be conserved and made an available resource to agricultural lands. Property damage in the form of soil sterilization from heavy metal accumulation will be alleviated.

RECOMMENDATIONS:

DNRC recommends an $82,000 grant.

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APPLICANT NAME: Deer Lodge Valley Conservation District

PROJECT/ACTIVITY NAME: Gilman-Wimberly Group Flood Protection

AMOUNT REQUESTED: $38,167 Grant

TOTAL PROJECT COST: $48,301

AMOUNT RECOMMENDED: $15,000 Grant

PROJECT DESCRIPTION:

The Deer Lodge Valley Conservation District proposes to prevent further Clark Fork River bank erosion of agricultural land and to provide flood control for a residential area located near Garrison junction.

River channelization and alterations from railroad and highway construction activities have caused streambank erosion along the banks of the Clark Fork River in this area. Due to ice buildup in a former

gravel pit pond which is now a part of the river channel, flooding of agricultural land occurs, resulting in further river bank erosion as the river attempts to change its course. If this channel change occurs, a 14-unit housing development built in the floodplain could be threatened by flooding.

Project activities include riprapping, seeding and dike construction. Local landowners will provide labor for seed bed preparation and seeding, as well as gravel and rock materials for riprap. SCS will provide engineering and final design. Actual construction will be performed under contract.

TECHNICAL FEASIBILITY ASSESSMENT:

Preliminary design work has been presented. Final design and construction will be funded by this grant.

Five alternatives were proposed to address the potential problems. The first alternative was to build up the abandoned railroad dike to protect the housing development. Since water has never topped this dike, this alternative was not selected. Homeowners could move their houses out of the floodplain. This would be costly to them, and would not alleviate the erosion problem. If the river channel was widened, further ice buildup might occur. The selected alternative was to riprap and build a dike on the east side, and fill a headcut and riprap the west side. This alternative will stop bank erosion and direct the river away from the railroad dike now protecting the housing development. The headcut will then be stopped, preventing the river from changing course toward the railroad dike. Seeding with grass will help stabilize the construction. This alternative may be the most appropriate; however, no innovative methods will be used. The Montana Department of Fish, Wildlife and Parks supports the correction of the headcut on the west side to prevent loss of fish and wildlife habitat.

Actual river flooding of the housing development has not occurred; however, groundwater seepage has affected homeowners who live within the floodplain. This groundwater impact is not addressed in the proposal.

Agricultural land along the river has been eroded or may potentially be eroded if the problem is not corrected.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $48,301, with the SCS providing $5,663 in in-kind services for engineering, and the landowners providing $4,470 for materials and labor. This grant will provide $38,167, of which $1,450 is for contract administration, $743 for a survey aide and project inspection, $27,739 for labor, $360 for materials, and $7,876 for inflation and contingency. Cost estimates appear reasonable. The Montana Department of Highways will protect the frontage road within the highway right-of-way. Pending an Attorney General's ruling of whether the Department of Highways or the contractor is responsible for obtaining a Stream Protection Act permit, the Department of Highways may be responsible for funding mitigation measures for erosion and flooding problems resulting from highway construction projects. This funding source has not been pursued.

ENVIRONMENTAL IMPACT ASSESSMENT:

Continued riverbank erosion will result in loss of agricultural land and will adversely affect water quality and aquatic habitat. Use of riprap can reduce this erosion, resulting in long-term positive environmental effects to water quality. However, use of riprap does not provide as positive environmental impacts as vegetative stabilization measures do. Some short-term adverse effects to water quality may occur during construction, but they will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include improving land and water quality by controlling erosion of agricultural land and reducing sediment. The land resource will then be conserved, and improvements made to domestic and agricultural water supplies. Potential property damage from surface water flooding may be prevented.

RECOMMENDATION:

DNRC recommends a grant of $15,000. A priority use of this grant is for the control of the headcuts that present the greatest potential threat to the Clark Fork River channel, to streambank vegetation, and to the protective railroad dike. DNRC recommends the use of vegetative stabilization over riprapping where possible.

Other funding sources including the highway department and the BN Railroad should be approached for further funding of this project.

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APPLICANT NAME: Private Water System Assistance Corporation

PROJECT/ACTIVITY NAME: Potable Water System Technical Advisor

AMOUNT REQUESTED: $100,000 Grant

TOTAL PROJECT COST: $100,000

AMOUNT RECOMMENDED: $ 16,700 Grant

PROJECT DESCRIPTION:

A private nonprofit corporation in Montana provides technical assistance through on-site visits and workshops to 400 members in water and energy conservation techniques, water system operation and maintenance, record keeping and rate structures. The two circuit riders employed by the organization serve primarily operators of established rural water systems in the western part of the state. The organization claims good success in implementing cost saving and water conservation techniques through its assistance program. The program is serving less than half the rural systems in the state and is experiencing considerable demand for its services. The proposal will provide an additional circuit rider. The application also states that funding will enable at least three additional workshops.

TECHNICAL FEASIBILITY ASSESSMENT:

Most of the small rural water systems in the state cannot afford highly trained operators. Many of these systems are old, require constant maintenance, and often have contamination problems. The applicant stated that at the time of the application 12 systems had boil orders. A combined circuit rider, workshop approach is an efficient way to address the public health and operation and maintenance problems prevalent in the state's small rural water systems.

FINANCIAL FEASIBILITY ASSESSMENT:

The $100,000 budget for the project includes an annual cost of $35,000 for the circuit rider which includes salary and $14,000 for travel. The remainder of the annual $50,000 cost is allocated to supporting services including secretarial salaries, telephone and supplies. There are no funds for workshop activities included in the budget. The total cost for the circuit rider is requested. As a private entity the corporation is eligible for 25% of the project cost or $25,000. This amount will fund a circuit rider for one year and provide some travel funds. The corporation is funded with dues and grants from the Farmers Home Administration and the Environmental Protection Agency. The fiscal year 1984 budget was reported as $99,000 and funds two circuit riders, a workshop function and support services.

ENVIRONMENTAL IMPACT ASSESSMENT:

The project will have long-term positive effects on the environment through water and energy conservation and improved water quality.

SUMMARY OF PUBLIC BENEFITS:

The project will provide better quality water supply for rural water systems and should help reduce water use, thereby reducing user fees.

RECOMMENDATION:

The Department recommends $16,700 for this project. Prior to contracting funding commitments to cover the salary, fringe benefits and travel costs of a circuit rider must be provided.

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APPLICANT NAME: Montana Department of Fish, Wildlife and Parks

PROJECT/ACTIVITY NAME: McNeil Slough Dam Reconstruction

AMOUNT REQUESTED: $86,773

TOTAL PROJECT COST: $89,688

AMOUNT RECOMMENDED: $56,000 grant

PROJECT DESCRIPTION:

The McNeil Slough Dam is located north of Nelson Reservoir adjacent to the Milk River in Phillips County. The impoundment was originally constructed in the mid-1940's and failed in 1977 as a result of burrowing muskrats or beaver. Fish stocking was initiated in 1946 and public fishing and recreation was provided until the facility was lost.

The Department of Fish, Wildlife and Parks has applied for grant funds to reconstruct the dam. The facility would be used for fishing, recreation and irrigation.

TECHNICAL FEASIBILITY ASSESSMENT:

The application is supported by a preliminary engineering assessment which recommends a new structure location; estimates the quantity of earth fill required; and provides a lump-sum cost estimate for the outlet works and a core trench. The preliminary report states that unknown soil conditions may warrant special pipe materials resulting in a considerably higher construction cost. Unknown soil and foundation conditions can result in major project modification and increased costs. The uncertainty of the project cost and required improvements can be addressed in the project design phase. Possible major cost increases can result in inadequate construction funding. There is some concern over completing final design before it is discovered that the project is too expensive to be finished.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated to be $89,688. The Department of Fish, Wildlife and Parks has requested $86,773 in grant funds and will contribute $2,915 through in-kind administrative services. The cost estimate has a high degree of uncertainty. A firm cost will be established after further engineering investigation.

ENVIRONMENTAL IMPACT ASSESSMENT:

The impacts associated with construction of the dam are unknown and should be addressed during the design phase. The dam and reservoir site is nearly the same as that of an earlier facility which functioned for over 30 years. Recreational opportunities for the area will be enhanced by planned addition of facilities for camping, picnicking, and boating.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will benefit residents within Phillips County. Use of the facility by people outside the area has not been established. Primary benefits associated with the project include fish and wildlife habitat enhancement; provision of recreational opportunities; improved water quality; and improved agricultural water supply.

Approximately 4,000 annual recreational visits are estimated for the facility.

RECOMMENDATION:

DNRC recommends a grant of $56,000 for reconstruction of the McNeil Slough Dam. Since the project cost estimate is not well established, the grant funds shall initially be available for project design activities as outlined in the application and as approved by the Department. Remaining grant funds shall be available for construction only after an acceptable design has been completed and full construction funding has been committed.

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APPLICANT NAME: Fort Belknap Indian Community

PROJECT/ACTIVITY NAME: Fort Belknap Test Drilling Project

AMOUNT REQUESTED: $73,280 Grant

TOTAL PROJECT COST: $81,780

AMOUNT RECOMMENDED: $57,000 Grant

PROJECT DESCRIPTION:

The Fort Belknap Indian community proposes to obtain information and specific data on the hydrologic characteristics of the alluvial aquifers beneath valleys of streams adjacent to the Little Rocky Mountains on the Fort Belknap Indian Reservation. A series of 20 test wells will be drilled to determine the thickness and areal extent of the aquifers, their capability to yield water to wells, and the water quality characteristics of the aquifers. Upon completion of the test drilling and hydrological testing, a plan for future development of the groundwater source will be developed and made available to the Tribal Council, Montana Bureau of Mines and Geology, U.S. Geological Survey, and Department of Natural Resources and Conservation's Reserved Water Rights Compact Commission.

The U.S. Geological Survey will provide technical assistance with the test drilling project. Actual drilling will be contracted to a private driller, and contract administration will be conducted by the Fort Belknap Indian community.

In 1983, a study to determine the potential sources of groundwater for irrigation, stockwater, domestic and municipal uses on the Fort Belknap Indian Reservation was conducted by the Montana Bureau of Mines and Geology. The study identified locations where test drilling and hydrologic testing would provide specific data needed to plan groundwater development. This proposal will complete that study, and will provide information to help understand the characteristics of the aquifers and to facilitate planning for the development of the resource. An emphasis will be placed on determining irrigation and stockwater supply sources.

TECHNICAL FEASIBILITY ASSESSMENT:

The Montana Bureau of Mines and Geology recommended this test drilling project in their 1983 study. The drilling of only 20 wells may not provide enough information to sufficiently define the aquifer. However, the U.S. Geological Survey has indicated they may be able to match a portion of the grant and expand the test drilling, which would provide more extensive and useful data.

While no imminent problems exist, use of the data from this study will be useful in developing a water resource management plan for the area, and in increasing the knowledge about potential irrigation, stockwatering and domestic groundwater sources.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $81,780 with tribal funds contributing $8,500 to the project, and this grant covering the remaining $73,280. The U.S. Geological survey may provide an unspecified amount of matching funds to expand the project.

Tribal funds will cover the Contract Administration costs of $8,500. Of the $73,280 grant funds, $16,000 will go to the U.S. Geological Survey for technical assistance from a hydrologist and technician, and $6,000 will cover laboratory analysis, supplies, maps and printing. Labor for drilling the test wells will be $40,000, and inflation and contingency will be $11,280.

Cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

The development of groundwater irrigation sources in this area may alleviate potential dewatering of surface water sources, thereby protecting riparian habitats that could otherwise be damaged. These would be positive long-term environmental impacts. Some adverse impacts may result from well construction, but they will be short-term and minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include adding to domestic and agricultural water supplies, and conserving the surface water resource. By providing information on the groundwater resource, the availability of that resource will be improved.

RECOMMENDATION:

DNRC recommends a $57,000 grant with the condition that matching funds and technical assistance are provided by the USGS or MBMG at an amount that will expand the project to increase its viability and insure the usefulness and availability of the results.

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APPLICANT NAME: Montana Bureau of Mines and Geology

PROJECT/ACTIVITY NAME: High Arsenic Groundwater in the Madison Valley

AMOUNT REQUESTED: $43,989 Grant

TOTAL PROJECT COST: $60,458

AMOUNT RECOMMENDED: $44,000 Grant

PROJECT DESCRIPTION:

The Montana Bureau of Mines and Geology proposes to delineate and map the areas in the Madison Valley where the shallow alluvial aquifer contains arsenic in excess of EPA Public Drinking Water Standards, and to determine whether river water recharge of the aquifer or leaching of arsenic-bearing sediment is the source of the arsenic.

The presence of excessive arsenic levels in groundwater from the shallow aquifers of the Madison Valley was detected during a project undertaken to locate a safe municipal groundwater source for Three Forks in 1983. Data from that project indicated that either sediments in the floodplain or the Madison River water were the source. Until the actual source and magnitude of the affected area are known, it will be difficult to plan for safe future development in the Madison Valley.

This proposal will attempt to determine the source and magnitude by collecting 87 water samples for analysis, and inventorying domestic and stock wells from Beartrap Canyon to the confluence of the Madison and Gallatin rivers. The Madison River will be sampled monthly for arsenic content, and test drilling will be conducted to provide information about groundwater flow, dissolved arsenic level patterns and aquifer composition.

Work will be performed by Montana Bureau of Mines and Geology personnel; final results in the form of maps and reports will be made available to county planning boards reviewing subdivision proposals, local citizens, the State Health Department, EPA and the Montana Department of Fish, Wildlife and Parks.

TECHNICAL FEASIBILITY ASSESSMENT:

The selected methods of determining the extent and source of arsenic levels appear to be the most technically feasible and cost effective alternatives. While the project does not address the solution to the excessive arsenic problem, it will identify areas where domestic development should not occur, and may provide background data for further studies on the long-term effects of arsenic toxicity on humans, plants, domestic animals, and fish and wildlife.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $60,458, with the Montana Bureau of Mines and Geology providing $16,560 for salaries and equipment, and the grant providing $43,898. Of the $43,898, $20,500 is for salaries and $20,913 for travel, well drilling and chemical analysis. The remaining $2,485 is provided for inflation contingency. Cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the information generated by this data long-term adverse environmental health impacts could occur to those persons utilizing groundwater sources high in arsenic. Information from this study could prevent the development of these hazardous water supplies and would result in long-term positive environmental effects.

No long-term adverse environmental impacts will result from this project. Any adverse effects from well drilling and testing will be short-term and minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include the prevention of disease by determining groundwater sources that should not be utilized for domestic water supplies and improving domestic water supplies by determining which areas are not contaminated with arsenic.

RECOMMENDATION:

DNRC recommends a $44,000 grant, and recommends that counties and communities affected by the arsenic be asked to contribute to this project to reduce the amount of the DNRC grant for the project.

APPLICANT NAME: Private Water Users Association

PROJECT/ACTIVITY NAME: Irrigation Ditch Tunnel Entrance Rehabilitation

AMOUNT REQUESTED: $$58,500 Grant and $176,000 Loan

TOTAL PROJECT COST: $234,500

AMOUNT RECOMMENDED: $167,000 Loan and $33,000 Grant

PROJECT DESCRIPTION:

This association proposes to improve the stability of a short section of its canal located just upstream from a conveyance tunnel of the canal. Slope movements are caused by runoff in wet years, resulting in cracking and shearing of the concrete lining. Seepage from the canal aggravates the problem in an unstable soil area also. The project will consist of four basic segments:

1. Placing a stabilizing berm at the toe of the slope near the tunnel entrance.
2. Lining the transition section of the canal with a flexible membrane liner.
3. Lining a section of the canal upstream of the tunnel entrance with compacted clay.
4. Removal of a large unstable rock from above the tunnel entrance.

TECHNICAL FEASIBILITY ASSESSMENT:

The existing instability of the canal at the tunnel entrance results in slippage of the canal away from the tunnel at from 1 to 3 inches per year. This requires annual maintenance of this area. If a major breakout occurred, tremendous damage to personal and city property would occur; loss of life could occur; loss of revenue by farmers because of the loss of water would be excessive. The need is established and the segments of construction are technically sound methods of correcting the instability. A private engineering firm has done field surveys, laboratory analysis and design for the project.

FINANCIAL FEASIBILITY ASSESSMENT:

Short-term monetary gain is not the object. The project really deals with preventive maintenance. Cost estimates for the project were made by the consulting engineering firm based on available standards in the area.

The association is financially sound and has no problem collecting assessments, which are based on costs plus a reserve. Currently assessments are $40 per landowner plus $13 per acre. This has increased the reserve by $11,000 annually in recent years. Loan repayment is scheduled for 20 years and will create payments of approximately $19,000; with the estimated 17,000 acres assessable, an increase of $1.50 per acre will repay the loan. This is a reasonable cost and will not create hardships on the landowners. The association will contribute $34,500 to the project.

Security in real estate has been offered as collateral which would adequately cover the loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be some negative impacts to the area during the construction and earth work. All areas disrupted will be reseeded and where necessary, topsoil will be stored and redressed over the fill material to return the area to its current environmental condition.

SUMMARY OF PUBLIC BENEFITS:

The greatest public benefit is the assurance of adequate irrigation water to the 17,000 acres of farmland and 1,000 users. Urban uses of the water include cemeteries, two local lakes, city parks, golf courses, and numerous owners of small acreages and lots. The local public is benefited by the increased protection from a washout that could cause substantial personal property loss and/or loss of life.

RECOMMENDATION:

The DNRC recommends a grant of $33,000 and a loan of $167,000 for this project subject to proof to the Department that applicant's funds or other funds have been acquired for project completion.

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APPLICANT NAME: Montana State University Earth Sciences Department

PROJECT/ACTIVITY NAME: Groundwater Exploration of the Bozeman Fan

AMOUNT REQUESTED: $113,817 Grant

TOTAL PROJECT COST: $113,817

AMOUNT RECOMMENDED: $85,000 Grant

PROJECT DESCRIPTION:

Community growth on the Bozeman fan in Gallatin County has created a potential water shortage which will impact the City of Bozeman, Montana State University, subdivision residents in the county, and the agricultural community. Groundwater development may help ameliorate the problem, particularly if it is coupled with floodwater recharge to prevent adverse surface water impacts and to improve sustained yield. The Montana State University Earth Sciences Department proposes to test the feasibility of groundwater development and to help direct future development of the Bozeman fan by implementing a groundwater exploration program. This program will identify the location, extent and characteristics of underground channels on and adjacent to the Bozeman fan through the use of seismic refraction. Test well drilling and pumping results wil be used to develop a model as the aquifer. A preliminary assessment of artificial floodwater recharge potential will be made. A final report will be produced and made available to city and county officials, Montana State University, developers, and agricultural interests. This information will help contribute to better planning and will maximize the potential to develop groundwater as a resource. The threat of future water shortages will be reduced. Well drilling and pumping will be contracted services, while all other work will be performed by Montana State University personnel.

TECHNICAL FEASIBILITY ASSESSMENT:

The Bozeman City-County Planning Area Master Plan has documented that all surface water sources for the City of Bozeman will not provide enough water for the city by the year 2000. Two alternative solutions suggested are the development of groundwater supplies and groundwater storage, using spring floodwater. These alternatives are the most cost-effective and technically feasible, and are the ones proposed by this project.

Refraction seismology is a widely recognized, cost-effective and tested technology. Given the complex geology of the Bozeman fan, it appears to be the most appropriate methodology to use in this area.

While this proposal will assess quantity questions, water quality is not addressed.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $113,817 with this grant providing 100% funding. Local government entities are in support of this project, but have not committed to provide any funds.

Of the $113,817, $11,160 is for contract administration, travel, communications and University overhead. Of the remainder, $38,500 is for professional personnel, $57,715 for equipment, laboratory costs, mapping and printing, and $6,442 is for inflation contingency.

All cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the development of additional water sources for the Bozeman area, adverse environmental impacts can occur from water shortages and depletion of surface water sources.

Negative environmental effects from test drilling and pumping will be minimal and short-term. Results of the proposed exploration will provide long-term positive environmental impacts by providing information to alleviate water shortages and promote planning for future development.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include water resource conservation by alleviating surface water shortages. Domestic and agricultural water supplies will be more available and improved, and potential public health problems associated with surface water supplies may be minimized.

RECOMMENDATION:

DNRC recommends a $85,000 grant. Gallatin County, the City of Bozeman, MSU and others who will benefit from this project should be asked to financially contribute to the project, reducing the need for the total grant.

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APPLICANT NAME: Whitefish County Water and Sewer District

PROJECT/ACTIVITY NAME: Whitefish Critical Area Identification and Preliminary Engineering

AMOUNT REQUESTED: $208,592 Grant

TOTAL PROJECT COST: $249,840

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The Whitefish County Water and Sewer District was established as a public entity in 1982 to address the water quality problems in the Whitefish basin and especially in Whitefish Lake, the water supply for Whitefish and lakeshore residents. The district includes approximately 39,000 acres around the lake and serves an estimated population of 2,200. In 1981, dye tests revealed that septic tank effluent was entering Whitefish Lake from sites along the east shore and septic tank failures were confirmed by the county sanitarian within a larger area around the lake. Area residents formed the Whitefish Basin Project to respond to these problems and subsequently the district was formed to provide the legal framework to develop comprehensive long-term solutions to the problem. Also in 1982 the Flathead County Commissioners allocated $32,500 for a limnology study of the lake. In 1983 the district was awarded a $100,000 grant by the Department of Natural Resources and Conservation from the Water Development Program to complete a resource inventory and management plan for the district. The results of the limnology study were released in early

1984 and confirmed that the lake demonstrates a trend toward premature eutrophication, that an oxygen deficit exists and that continuing input of phosphorus will result in rapid deterioration of the lake's water quality. The proposed project will build from the limnology study and provide for the identification and mapping of specific areas of septic breakout and determine the nature of the contaminants. A feasibility study of treatment alternatives is proposed for these critical areas to identify areas that can be served by the Whitefish sewage treatment facilities and feasible individual or package treatment alternatives. A groundwater study is proposed for the area to identify recharge and discharge areas, groundwater quality, and depth and direction of flow. Areas of contaminated groundwater and areas particularly sensitive to contamination will be identified. The district expects that the Montana Bureau of Mines and Geology will conduct the groundwater study and the Bureau has indicated that matching money may be available. The critical area study and the groundwater study will be incorporated in the Water Management Plan, and form the basis for an EPA Construction Grant application and development recommendations by the district. In addition to the Bureau of Mines and Geology, the district plans to hire consultants to complete the leachate analysis and treatment feasibility work for the critical area study. The proposal also provides for the continuation of the district manager position to coordinate special studies, continue a public education program, and prepare implementation programs for the Water Management Plan.

TECHNICAL FEASIBILITY ASSESSMENT:

The Whitefish County Water and Sewer District proposes to use a water-drawn fluorometer to identify the septic leachates in the lake. The instrument and technique have been used successfully by Dr. Jack Stanford of the University of Montana. The methodology is considered more effective and practical than attempting to dye-test every septic system on the lake and can successfully identify phosphorus levels, the lake's major pollution problem. The Montana Bureau of Mines and Geology is an acknowledged authority in groundwater analysis and has prepared a thorough study plan for the district. The opportunity to coordinate surface and groundwater studies for the area is considered advantageous for both studies and will enable the district to develop both water supply and sewage treatment recommendations for the area. This approach addresses the most critical problems revealed in the district's work thus far and demonstrates a logical progression in its management program.

FINANCIAL FEASIBILITY ASSESSMENT:

The district is requesting a grant of $208,592 for the program which will cost a total of $249,840. It is anticipated that the Montana Bureau of Mines and Geology will contribute $21,248 and that the county will levy a $20,000 assessment in the district. The program budget includes administrative costs and the salary of the district manager. Cost estimates for the engineer, hydrologist, and limnologist for the study components are documented. Although the program provides for an integrated approach to the district's major problem, any of the components can be funded separately and be a worthwhile contribution to the district's efforts.

ENVIRONMENTAL IMPACT ASSESSMENT:

The limnology study recently completed for Whitefish Lake documents rapid deterioration of the lake. If the problem is not addressed, the quality of the water in the lake may pose a health hazard throughout the area and contribute to a deterioration of all aspects of the environment dependent on a safe and healthful water supply.

SUMMARY OF PUBLIC BENEFITS:

The most critical public benefit of the program is preserving a safe water supply for Whitefish and lakeshore residents. The program will provide a similar benefit for all downstream water users including residents of the Flathead Lake area. The program will also preserve one of the most important recreational areas in the state and the fishery and wildlife habitat of the area.

RECOMMENDATION:

The Department recommends a $100,000 grant for the program on the condition that the reduced scope of work include the leachate study and sewage treatment feasibility work. Funding commitments for the total budget will be required prior to contracting.

APPLICANT NAME: Meagher County Newlan Creek Water District (NCWD)

PROJECT/ACTIVITY NAME: Newlan Creek Feasibility Study

AMOUNT REQUESTED: $231,000

TOTAL PROJECT COST: $231,000

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

Newlan Creek Dam is located in Meagher County approximately seven miles north of White Sulphur Springs. The project was planned, designed, and constructed in the 1970's by the Soil Conservation Service (SCS) under their Watershed Protection and Flood Prevention program. The original plan centered around construction of a multipurpose reservoir to provide water for irrigation; to reduce flood damages along Newlan Creek; and to provide water for recreation and fish and wildlife habitat improvement. Much of the water for irrigation was to come from water diverted from the Sheep Creek drainage.

During the course of project design and construction a series of problems developed. Inflation and cost increases, a court determination of inadequate Sheep Creek water rights, and environmental problems with the proposed Sheep Creek diversion resulted in termination of the project before the Sheep Creek diversion or the irrigation facilities were constructed. In January 1979, the SCS determined that the feasibility of continuing construction activities with federal or local funds was not justified from an economic standpoint.

The Meagher County Newlan Creek Water District (NCWD) was formed at project inception as the primary local sponsor to qualify for SCS federal program funding. Termination of the project resulted in a legal action by NCWD against the federal government. The legal settlement provided the NCWD with full ownership of the project and awarded them $142,857 for operation and maintenance of the dam and reservoir. In addition, the federal government was directed to pay the NCWD bonded indebtedness of approximately $566,000. In addition, funds provided for project development were a 50 percent cost share for construction of the dam; a $460,000 Economic Development Administration grant; and a $150,000 grant from the Montana Legislature for fish, wildlife and recreational benefits.

The NCWD has requested $231,000 in grant funds to determine the technical, economic and financial feasibility of completing the project to obtain the highest possible benefit of the existing dam. The NCWD believes that alternatives have not been investigated which offer potential feasibility.

TECHNICAL FEASIBILITY ASSESSMENT:

The NCWD has proposed a study to address the feasibility of developing irrigation and to assess needed rehabilitation for Newlan Creek Dam. Development of new and supplemental irrigation is the only major project purpose which has not been achieved. (Some of the planned flood control and recreational benefits are now provided.) The rehabilitation assessment is in response to the U.S. Army Corps of Engineers April 1981 report describing nonconformance with COE dam safety standards. The applicant has stated that reduction or termination of facility use is an option which will be considered because of the public safety question associated with the dam.

The proposed study is very comprehensive and is aimed at addressing all development and dam safety aspects of the project in order to arrive at the best technical, economic and financial alternative. The final product will be a report which the NCWD can use in approaching state and federal agencies for financial assistance. The study could be broken into phases. However, the applicant is interested in the results of the entire proposal to allow development of the best facilities.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed study activity is estimated to cost $231,000. The NCWD has requested grant funds for the entire amount and has indicated there are no other sources of funds available.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study activity will make a preliminary assessment of the impacts associated with the various rehabilitation and irrigation development alternatives. Completion of future improvements to the dam will primarily affect the existing developed project area. If findings of this study are positive, construction of the Sheep Creek diversion or new irrigation facilities could result. Final impacts of such construction should be assessed during the design phase of the project.

There are no long- or short-term negative impacts associated with the study.

SUMMARY OF PUBLIC BENEFITS:

The proposed study activity will primarily benefit the members of the NCWD. Future actions to either improve the facility or reduce use would affect recreational users. Primary benefits intended from the study include: possible prevention of death or personal injury; improving water availability for agriculture; preserving a recreational facility; preserving a flood control facility; and improving the local economy.

RECOMMENDATION:

DNRC recommends a grant of $100,000 for preparation of a rehabilitation and irrigation development study for Newlan Creek Dam. Any reduction in the scope of the proposed project shall result in a proportional decrease in grant funds.

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APPLICANT NAME: Montana State University and Southern Agricultural Research Center

PROJECT/ACTIVITY NAME: A Cablegation Irrigation System Demonstration

AMOUNT REQUESTED: $31,000 Grant

TOTAL PROJECT COST: $63,160

AMOUNT RECOMMENDED: $10,000 Grant

PROJECT DESCRIPTION:

This project is sponsored by Montana State University (MSU) and the Southern Agricultural Research Center (SARC) at Worden, Montana. The project will be designed and built at Montana State University but implemented at Worden in an agronomic area compatible to row crops where the major use for Cablegation is found. The basics of the system include mainline PVC pipe with holes drilled near the top laid on a specified grade with a bell shaped plug inside the pipe that is attached to a pulley outside the pipe by a nylon rope. Water pressure pushes the plug through the pipe at a rate controlled by the pulley and allows water to flow out the holes during the movement of the plug for a predetermined interval. This project is established to design, build, evaluate and demonstrate Cablegation in Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

Cablegation was developed and tested at the Snake River Conservation Research Center in Kimberly, Idaho. Studies at that facility have shown that Cablegation provides a high uniformity of water application and minimal runoff relative to other furrow irrigation techniques. Irrigation uniformity is comparable to that of sprinkler irrigation but costs are fractional. The need is to introduce Montana farmers to this system.

FINANCIAL FEASIBILITY ASSESSMENT:

The costs provided in the budget are based on standards recognized by the State, and are adequate to do the job as planned. Under the proposed budget, DNRC would provide 49 percent of the total cost at $31,000, MSU 25 percent at $16,010 and SARC 26 percent at $16,150. Of the funds requested from DNRC, $14,160 is budgeted for the system's equipment and supporting field equipment. There are no direct short-term monetary benefits from the project..

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts created by the project. Positive impacts will occur through water conservation and management which will also protect the soil from over-irrigation.

SUMMARY OF PUBLIC BENEFITS:

After installation, the project will be used for demonstration. Many farmers in the Missouri and Yellowstone River drainages where row crops are grown should find the system useful.

RECOMMENDATION:

DNRC recognizes that cablegation has use in the State of Montana but also recognizes that very extensive research has been done by the University of Idaho and the Snake River Conservation Research Center at Kimberly, Idaho. A "Handbook for Cablegation" is presently being published by the Research Center which is quite complete in scope. Mr. W.O. Kemper, Director of the SRCRC, has indicated a desire to establish a demonstration project in Montana and further indicated a willingness to furnish manpower to assist in design layout and system construction. Under these conditions DNRC recommends a grant of $10,000 for the purchase of pipe and related system equipment.

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APPLICANT NAME: Private Rural Water Corporation

PROJECT/ACTIVITY NAME: Rural Water System

AMOUNT REQUESTED: $88,000 Grant

TOTAL PROJECT COST: $352,578

AMOUNT RECOMMENDED: $88,000 Grant

PROJECT DESCRIPTION:

A nonprofit corporation of rural residents in northern Montana was formed to develop a rural water system to provide water for domestic and livestock use for approximately 39 users.

Many attempts to develop individual water supplies in the area have failed because of the inadequate quantity and quality of the area's groundwater. All rural residents of the area are forced to haul water necessary for domestic purposes, an expensive, time-consuming situation.

The group commissioned an engineering firm to perform a feasibility analysis and develop preliminary plans. The source of water for the project will be an existing county water district line. The private corporation will hook into this system and purchase bulk quantities of water. The proposed distribution system consists of about 73 miles of pipe of various sizes and classes.

Preliminary discussions with the county water district have indicated that the district will sell water to the group as long as they remain responsible for their own construction and maintenance. The county system has a maximum capacity of 650 users and is currently serving only 120 users. However, the county system has experienced recent water shortages and is currently in the process of seeking a new water source. The corporation will need to negotiate a contractual agreement with the county.

The development of a rural water system would be a significant improvement in the quality of life for the area's residents.

TECHNICAL FEASIBILITY ASSESSMENT:

The feasibility analysis and preliminary design of the proposed system submitted in 1981 appear to be adequate. However, the estimates for the total project cost need to be updated before grant funds can be used. The recommended alternative (trickle water system) seems cost-effective, considering the distances involved. Considerable savings will be achieved by the use of the county water district's water supply. This supply, along with a low-volume delivery system and existing on-site storage facilities, make this low-density, large-area system a feasible approach.

The system has been designed so that almost all distribution lines follow the existing rights-of-way for county roads. The county has said it is willing to grant easements because the project is in the public interest.

The corporation intends to hook into the county system on the high pressure side of one of the system's booster pumps, taking advantage of this high pressure to help power the system. Although the county water district has said it is willing to provide water to the corporation, it is not known if the district is aware of these details.

If funding is granted, the Water Quality Bureau must review and approve the system.

FINANCIAL FEASIBILITY ASSESSMENT:

The estimated project cost of $352,518 will be repaid by 39 users. The corporation has not provided information on the source of the residual funds needed in addition to the $88,000 grant recommended by the department. When these funds are obtained and the terms known, the members will have to contractually agree to monthly user rates which will retire this debt.

ENVIRONMENTAL IMPACT ASSESSMENT:

The applicant believes there will be no significant environmental impacts from the project. However, there may be some temporary impacts to air quality and wildlife during project construction.

SUMMARY OF PUBLIC BENEFITS:

The benefits of the proposed rural water system are realized almost exclusively by its users. The benefits include water management, and water availability for domestic and agricultural use.

The primary benefits, received by the water users, include the correction of a water problem, water availability for domestic and livestock use, short-term employment during the project's construction, and a better quality of life.

Secondary benefits include some savings of nonrenewable resources from reduced water hauling and a minor increase in agricultural productivity.

RECOMMENDATION:

The department recommends a grant of $88,000. As discussed above, receipt of these grant funds will be contingent on the corporation providing acceptable design plans and arrangements for residual financing.

APPLICANT NAME: Montana Department of Fish, Wildlife and Parks

PROJECT NAME/ACTIVITY: Streambank Preservation

AMOUNT REQUESTED: $50,000 Grant

TOTAL PROJECT COST: $50,000

AMOUNT RECOMMENDED: $35,000 Grant

PROJECT DESCRIPTION:

The fisheries division of the Montana Department of Fish, Wildlife and Parks (DFWP) requests a grant of $50,000 to enable continued financial support of its Streambank Preservation Program. Projects funded under this program help to preserve fish and wildlife habitat and to maintain or improve water quality. They help prevent soil erosion and protect private and public property. The grant monies will be sub-granted by DFWP to individuals in different geographical locations in Montana on a 50% cost-share basis with the individual. No more than $5,000 per applicant will be sub-granted. DFWP field personnel and local conservation districts, through the Natural Streambed Preservation (310) process, will identify projects to receive funding. Final funding approval will rest with the Department's habitat preservation coordinator. Projects will be inspected by the Department and used as demonstration areas for other streambank projects in the area.

DFWP will provide an unspecified amount of in-kind services in the form of administration, site inspection, and provision of educational forums.

DFWP Streambank Preservation program received a $100,000 grant in 1979, of which 65,000 was distributed to projects. In 1983 they were approved for a $50,000 Water Development grant, but due to reductions in coal tax revenues, have not received that funding.

TECHNICAL FEASIBILITY ASSESSMENT:

It is not possible to make a technical feasibility assessment because specific streambank preservation projects to be funded by this program have not yet been identified. However, in the area of streambank preservation, the DFWP does promote alternatives to the old "hard architecture" techniques (riprap, etc.) by advising landowners to use vegetative stabilization and other innovative and less costly methods.

FINANCIAL FEASIBILITY ASSESSMENT:

A $50,00 grant is requested. The funds will be sub-granted to a minimum of 10 projects ($5,000 maximum/each) at a 50% cost share with the individual. The DFWP will provide administrative in-kind services, but has not included direct funding for this program out of their department budget.

Some DNRC Conservation Districts Division's 223 funds are also available for funding streambank preservation projects through local conservation districts.

ENVIRONMENTAL IMPACT ASSESSMENT:

Streambank stabilization problems left uncorrected can result in numerous adverse environmental effects such as destruction of fish and wildlife habitat, soil erosion, water quality sediment problems, property damage, and loss of recreational opportunities. Projects funded by this program would alleviate these problems in specific locations. Any short-term negative environmental impacts due to implementing the streambank preservation techniques would be greatly offset by the long-term positive aspects of the project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from the projects include prevention of soil erosion resulting in improved water and land quality. Vegetative stabilization provides fish and wildlife habitat and increase recreational opportunities. Public and private property losses will also be minimized.

RECOMMENDATION:

DNRC recommends a $35,000 grant.

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APPLICANT NAME: Treasure County Conservation District

PROJECT/ACTIVITY NAME: Low interest loans for underground pipe placement

AMOUNT REQUESTED: $ 300,000 Grant

TOTAL PROJECT COST: $1,199,097

AMOUNT RECOMMENDED: $ 100,000 Grant

PROJECT DESCRIPTION:

Within the Treasure County Conservation District there are 21,295 acres of land irrigated from the Yellowstone River through four main canals. Currently, 5,207 acres are irrigated through underground pipe with 16,088 acres supplied by open ditches; of this acreage it would be economically and technically feasible to irrigate 9,519 acres through underground pipelines. The project goal is to install approximately 41 miles of pipeline to control seepage and evaporation loss, stop erosion, diminish the spread of weeds, and increase productive acres.

The grant request is a beginning step to fund the project. The grant monies would not go directly into construction; rather, they would be loaned out at very low interest rates to the individual farmers for installation of pipe according to the overall District plan. As repayments are made, that money will be reloaned to other farmers to continue the pipeline installation process. It is estimated that with a $300,000 grant coupled with ACP cost-share funds the project can be completed in eight years.

TECHNICAL FEASIBILITY ASSESSMENT:

The need exists to control seepage, erosion, evaporation loss and the spread of weeds. An enclosed carrier is the best method to accomplish this. All systems are to be designed and approved by the Soil Conservation Service which will determine the complete technical feasibility of the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The completed project will in eight years have a direct cost of $1,199,097, as determined by the Soil Conservation Service through its average cost index. Funding is proposed as follows:

DNRC Grant	$300,000	25%
ACP Cost Share	276,500	23%
Structured Loans	622,597	52%

The benefits are not totally tangible; however, 4,352 acre feet of water will be saved for $52,219 per year, the cost of ditch maintenance on 41 miles of open ditch at $58,449 per year, and a reduction in the need for weed control of $94,171. These total an annual savings of $204,839 with the completed project.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts on the environment. Construction will not create pollution or barren areas. Major benefits will result from strict water conservation, erosion control, and noxious weed control.

SUMMARY OF PUBLIC BENEFITS:

The Treasure County Conservation District serves approximately 105 landowners, of which 46 are directly involved in this project. The public benefits are the conservation of soil and water and more efficient use of the resources. The control of noxious weeds is an economic benefit that affects the entire populace.

RECOMMENDATION:

DNRC recommends a $100,000 grant.

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APPLICANT NAME: Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Riparian Management Program

AMOUNT REQUESTED: $95,000 Grant

TOTAL PROJECT COST: $105,000

AMOUNT RECOMMENDED: $66,500 Grant

PROJECT DESCRIPTION:

The Conservation Districts Division of Montana Department of Natural Resources and Conservation proposes to provide funding to conservation districts to plan and implement four to six projects demonstrating the effectiveness of various riparian protection practices along streambanks within the conservation district boundaries. A plan for each project will be developed by the landowner, Soil Conservation Service and the conservation district. The plan may include vegetative stabilization practices such as grass or willow plantings, construction practices such as riprap or jetties, or management practices such as differing grazing systems on streambanks. Upon completion, each project will be used as a demonstration site.

The Montana Department of Health and Environmental Sciences has identified sedimentation as the number one water quality problem in the state. Streambank erosion is the major cause of this sedimentation. Riparian management projects can reduce this sedimentation by protecting streambanks and adjacent riparian areas.

TECHNICAL FEASIBILITY ASSESSMENT:

Because the project sites have not been identified, it is not possible to conduct a specific technical feasibility of the riparian management alternatives which will be selected and implemented. Traditional structures such as riprap and jetties will be used as well as innovative vegetative plantings and grazing management systems.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated to be $105,000. A $95,000 grant has been requested. The Soil Conservation Service and the landowners will donate the cost of labor, estimated to be $10,000. Of the $95,000 grant, $76,000 will be for material, $9,500 for professional and technical costs, and $9,500 for

contract administration by the conservation districts. Within these cost ranges, it is estimated that four to six projects could be funded. Without knowing specific proposals, it is not possible to determine the adequacy of the proposed budget.

ENVIRONMENTAL IMPACT ASSESSMENT:

Severe short- and long-term environmental effects are associated with streambank erosion problems. Public and private crop and rangeland is destroyed, water quality severely impacted, fish and wildlife habitat destroyed, and recreational opportunities reduced. Proper riparian management techniques can alleviate these adverse effects, resulting in positive long-term environmental impacts. Some short-term negative impacts may occur during implementation of stabilization techniques.

SUMMARY OF PUBLIC BENEFITS:

Public benefits associated with this project will be the provision of streambank erosion control resulting in improvement to water and land quality. The land resource will be conserved, and private and public property protected. With the use of vegetative stabilization, fish and wildlife habitats will be enhanced and more recreational opportunities made available.

RECOMMENDATION:

DNRC recommends an $66,500 grant.

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APPLICANT NAME: Custer County

PROJECT/ACTIVITY NAME: Eastern Montana Fairgrounds Sewer System, Lift Station and Force Main

AMOUNT REQUESTED: $117,380 grant

TOTAL PROJECT COST: $117,380

AMOUNT RECOMMENDED: $ 25,000 grant, $ 92,380 loan

PROJECT DESCRIPTION:

Custer County operates the Eastern Montana Fairgrounds, located immediately across the Tongue River from Miles City. A number of public events are held annually at the fairgrounds that are of major economic importance to Miles City. At present the fairground buildings are not served by a sewer system. A forty-unit recreational vehicle park is heavily used for several months each year and it is served by a central dump station. The dump station is not convenient for use by the large recreational vehicles that frequent this trailer park. As a result, raw sewage is often discharged onto the ground which creates a severe hazard to public health. The dump station formerly drained to a septic tank/drainfield system. However, in 1983 the system, which is located in the 100-year floodway, failed and surfacing septic tank effluent was creating a hazard to public health and was entering the Tongue River. The County Sanitarian ordered that the system no longer be used. As a result, the county installed a temporary line from the dump station to the Miles City sewer system located across the Tongue River. The solution is viewed as only temporary and a permanent solution must be installed before the summer of 1985 or the Montana Department of Health and Environmental Sciences will not allow the recreational vehicle park to operate. Closure of the recreational vehicle park would threaten the success of the public events held annually at the fairgrounds.

The proposed project consists of design and construction of a gravity sewer line to serve the recreational vehicle park and other fairgrounds facilities, and a lift station and force main under the Tongue River to the Miles City sewer system.

TECHNICAL FEASIBILITY ASSESSMENT:

Four alternative methods of solving the problem were considered and the selected alternative was for several reasons considered to be the only practical solution to the problem. The proposed project is technically feasible and will solve the present sewage disposal problems at the fairgrounds. Preliminary engineering has been completed on the project.

The design for the project will have to be reviewed and approved by both the Water Quality Bureau (WQB) and the Food and Consumer Safety Bureau (FCSB) of the Montana Department of Health and Environmental Sciences. Both the WQB and FCSB agree on the need for the project and the proposed solution to the sewage disposal problems at the fairgrounds. Miles City will also have to formally agree to accept the county's sewage before the project can succeed. The city has preliminarily approved the project and formal approval is anticipated.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $117,380 of which $105,390 are the costs of construction and contingencies and the balance is engineering and financing. The application is for a grant of $117,380. Custer County officials have indicated that they do not wish to be considered for a loan but that they may fund a portion of the project with revenue sharing or other local funds if a 100% grant is not received. The estimated costs appear to be realistic and reasonable.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with similar construction projects. The crossing of the Tongue River will obviously involve instream work and result in an unavoidable, short duration increase in turbidity in the Tongue River. Custer County will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local conservation district and a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB for the instream work. These permitting processes are structured to minimize the impacts of necessary instream construction activities.

Construction of the proposed improvements will have a positive impact on the environment; potential hazards to public health and threats to water quality would be eliminated or at least minimized.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit Custer County and the fairground activity participants. Miles City will be indirectly benefited by keeping the fairgrounds open and useable. The several large public activities held annually at the fairgrounds are of economic importance to the city.

Correction of the failed septic system will prevent disease, improve water quality and minimize impacts on fish and wildlife. Correction of the present improper sewage disposal at the fairgrounds recreational vehicle park will also prevent disease.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $25,000 and a loan of $92,380, contingent upon Custer County securing the remaining necessary project funds or passing the necessary bond issue. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements. A loan is offered to insure that sufficient monies are reserved for the project in case Custer County changes its mind and desires to use DNRC loan monies.

APPLICANT NAME: Montana State University
Department of Civil Engineering/Engineering Mechanics

PROJECT/ACTIVITY NAME: Guidelines for Community Water Use Demands

AMOUNT REQUESTED: $31,700 Grant

TOTAL PROJECT COST: $47,550

AMOUNT RECOMMENDED: $25,000 Grant

PROJECT DESCRIPTION:

The Department of Civil Engineering at MSU proposed the development of criteria to help establish water use demands appropriate for Montana communities. The criteria are intended as guidelines for engineers designing water distribution systems and state agencies reviewing the designs. The Department contends that reliable use data is not available for communities with less than 10,000 people, either in standard engineering texts or in local use records. The potential, therefore, is very great for over- or under-designing systems. Resulting inadequacies can contribute to distribution systems unable to deliver critical fire flows or peak needs. Over-design can result in costs far in excess of need. The recent Governor's Task Force on Infrastructure identified a capital cost of $100 million for municipal water system improvements; sound design criteria appear to be critical for the accomplishment of needed improvements statewide within local or state financial capabilities. The study was proposed for funding jointly with the MSU Engineering Experiment Station to be carried out by an engineer and research assistants. It was endorsed by a wide range of private civil engineers and the Water Quality Bureau of the Montana Department of Health and Environmental Sciences.

TECHNICAL FEASIBILITY ASSESSMENT:

The methodology for the study is sound and includes a considerable emphasis on field work in Montana communities. The common characteristics of a large percentage of Montana small communities make the development of standard criteria a reasonable approach to the design problem. An advisory committee of state agencies, insurance organizations, engineering firms and local representatives is also proposed.

FINANCIAL FEASIBILITY ASSESSMENT:

The budget for the project is reasonable and includes allocations for travel and the research assistants needed to carry out the field work associated with the project. The University is requesting a grant of $31,700 and will contribute $15,850 for a total project cost of $47,550. If necessary, the project can be scaled down to accommodate a small budget. In that event, work would probably be confined to a defined type of community.

ENVIRONMENTAL IMPACT ASSESSMENT:

Lack of appropriate design criteria for small communities has had no demonstrated impact on the natural environment thus far. However, instances of both over-design and under-design occur frequently and lead to waste of the resource and sometimes unnecessary disruption of the environment to search for new sources. This program would make a significant contribution to conserving the state's water resources.

SUMMARY OF PUBLIC BENEFITS

The principal benefit from the project would be the development of more cost-effective water supply systems. Fire protection would also be more adequate.

RECOMMENDATION:

The Department recommends $25,000 for the project. Prior to contracting, the Department of Health and Environmental Sciences as well as the Department must approve the scope of work for the project and all funding must be committed.

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APPLICANT NAME: Glen Lake Irrigation District

PROJECT/ACTIVITY NAME: Therriault Creek Syphon Construction

AMOUNT REQUESTED: $155,000

TOTAL PROJECT COST: $155,000

AMOUNT RECOMMENDED: $32,000 grant and $123,000 loan

PROJECT DESCRIPTION:

The Glen Lake Irrigation District of Eureka, Montana provides irrigation water to 3,156 acres. The district has a persistent bank sloughing problem in an unstable section of their main canal. The critical section is approximately one mile long and is located on a relatively steep hillside along Therriault Creek. The bank sloughing action results in restricted ditch flows and increased maintenance costs. The district is concerned that a canal failure might occur, which would interrupt their irrigation water supply and result in erosion damage to the creek below.

The district has proposed installation of a 46-inch syphon to eliminate the problem ditch section. The project would eliminate over two miles of canal and reduce associated maintenance costs.

TECHNICAL FEASIBILITY ASSESSMENT:

The major problem identified is bank sloughing in a one-mile section of canal. The Soil Conservation Service (SCS) has indicated the cause is saturated soils on very steep slopes. They indicated that the problem requires ongoing minor maintenance work to decrease the risk of canal failure. Failure would result in loss of irrigation water supply for the entire Glen Lake District until the ditch could be repaired. Failure may also result in extensive property damage along Therriault Creek.

The SCS conducted a preliminary on-site investigation and considered three alternatives as follows: 1) operate the canal as is with close monitoring; 2) line the canal and install a toe drain; or 3) replace approximately two miles of canal with approximately 2,000 feet of syphon. They recommended Alternative 3 because it would eliminate the existing risk of failure and has a longer life than Alternative 2 at a comparable cost.

The proposed solution is technically feasible and will eliminate the problem.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated to be $155,000 which includes $138,800 construction and $16,200 contingency. The SCS will provide assistance to the Glen Lake Irrigation District for design and construction management activities at no cost to the owner.

The district currently charges an annual fee of $20 per acre for water delivered to all lands in the project area.

ENVIRONMENTAL IMPACT ASSESSMENT:

The project will require crossing Therriault Creek with a large-diameter syphon pipe. Clearing of timber and construction of an access road will also be required in the drainage. Final short- and long-term impacts should be addressed during the design and permit acquisition phase of the project.

Completion of the project will eliminate potential damage associated with the failure of the canal.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will benefit members of the Glen Lake Irrigation District. Primary benefits include: improved agricultural water supply; improved water quality; water conservation; and prevention of property damage.

RECOMMENDATION:

DNRC recommends a grant of $32,000 and a loan of $123,000 for construction of the Therriault Creek syphon. Any reduction in the scope of the proposed project shall result in a proportionate decrease in grant funds.

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APPLICANT NAME: Cooke City Water Users Association

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $ 50,000 grant, $150,000 loan

TOTAL PROJECT COST: $209,542

AMOUNT RECOMMENDED: $42,000 grant, $158,000 loan

PROJECT DESCRIPTION:

Cooke City is supplied domestic water by the Cooke City Water Users Association, a nonprofit corporation. The association services a total of 62 users, including both commercial and residential users and summer homes. The association presently obtains most of its water from a spring located north of Cooke City. In recent years the spring has not been able to supply enough water to meet Cooke City's needs (especially during the fall and winter) and the association ran a line to nearby Miller Creek, a tributary to Soda Butte Creek. Because the association has had to use an untreated surface water source that is open to contamination by Giardia lamblia and other organisms, the Montana Department of Health and Environmental Sciences has placed a "boil order" on the system and ordered the association to develop a suitable supply and stop use of Miller Creek. Uniquely severe winter temperatures in the area and an abundance of shallow bedrock often makes it difficult to bury water lines below the frost line. In order to keep water lines in the area from freezing, the Cooke City Water Users Association needs as its source a relatively warm spring or other groundwater source that has a sustained yield. Valves on the lower end of the system are opened slightly and water is wasted into the creek to keep water moving in the mains. This practice of constantly moving water through the mains by wasting on the lower end of the system would be quite costly unless the supply is gravity fed as with a spring.

Although the association has other water system problems in need of correction, their priority need is to find and develop a dependable source of water to complement their existing spring supply. The line to Miller Creek, an unacceptable source, will be eliminated upon completion of development of the new supply.

The project consists of design and construction of a spring box at Soda Butte Spring, 5,600 feet of 4-inch transmission line from the spring box into the community, air and vacuum relief valves, control valves and other appurtenances.

TECHNICAL FEASIBILITY ASSESSMENT:

Preliminary engineering has been completed on this project. Numerous alternative supplies were not considered because of the special needs of the association for a gravity fed spring system. A rather detailed cost estimate of the improvements has been developed. The proposed project is appropriate and technically feasible and should produce the desired effects.

The design of all improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB supports the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $209,542. Of this total estimated project cost, approximately $163,198 is the cost of construction and contingencies and the balance is for engineering and administration. The application is for a grant of $50,000 and a loan of $150,000. The association cannot bond for improvements. Therefore, a county water and sewer district will have to be formed and the new district will issue revenue bonds to cover the loan amount upon approval of the voters in the district. The Cooke City Water Users Association has indicated a willingness to accept a smaller grant than requested and proportionately larger loan in order to provide for completion of the project in a timely manner. The estimated project costs appear reasonable and realistic.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with similar construction projects. The stream crossing in Cooke City will obviously involve instream work and result in an unavoidable, short duration increase in turbidity in Soda Butte Creek. The applicant will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local conservation district and a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB for the instream work. The above permitting processes are structured to minimize the impacts of necessary instream construction activities. Positive impacts will result from elimination of the potential public health hazard associated with drinking untreated surface water from Miller Creek.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit the residents of Cooke City and indirectly or secondarily benefit Yellowstone Park visitors and tourists visiting Cooke City. The major public benefits associated with development of an adequate source of water include prevention of disease, adding or improving domestic water supply and providing new business and employment opportunities. Obviously, a "boil order" in place in a community discourages both commercial and residential growth. Providing the additional water will also help prevent property damage and prevent death or personal injury due to fire, although the upgraded system will still have insufficient capacity for fighting a major fire.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $42,000 and a loan of $158,000, contingent upon formation of a rural improvement or county water and sewer district and upon the district passing the necessary bond issue and receiving the other necessary project funds. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

APPLICANT NAME: City of Red Lodge

PROJECT/ACTIVITY NAME: Irrigation System and Park Development

AMOUNT REQUESTED: $100,000 Grant

TOTAL PROJECT COST: $241,930

AMOUNT RECOMMENDED: $100,000 Grant

PROJECT DESCRIPTION:

The City of Red Lodge proposes to stabilize an abandoned coal mine reclamation site and an abandoned sanitary landfill site by planting trees and shrubs and installing an irrigation system to prepare the area for use as the Coal Miner's Memorial Park and Red Lodge Zoo.

The project site is an abandoned mine dump and an abandoned sanitary landfill site which have been declared a public health and safety hazard by the Department of State Lands and the Department of Health and Environmental Sciences. Both sites now adversely affect the groundwater and surface water quality of Rock Creek, and are aesthetically unpleasant. Under the Abandoned Mine Reclamation Act program, the Montana Department of State Lands will reclaim the site, and will work closely with the City of Red Lodge through the Zoological Society to incorporate the reclamation project into the City's plan for a park and zoo development. This park and zoo development plan was outlined in a master plan developed for the site in 1983 through funds received from a Land and Water Conservation Fund grant from the Montana Department of Fish, Wildlife and Parks, private contributions and Carbon County. The Department of State Lands will reclaim the area, seed it in lawn grass and fence the site to keep out livestock. They will also excavate ponds to be used for water storage, waterfowl habitat, and aesthetic purposes. Funds from this grant will purchase shrubs and trees for further stabilization and landscaping purposes, and provide an irrigation system for the entire park and zoo development. Funding for further development of the park and zoo has not yet been secured.

An overseer of the construction activities will be hired to solicit bids, award contracts, monitor construction, and supervise the landscape architecture.

TECHNICAL FEASIBILITY ASSESSMENT:

Technically thorough reclamation plans have been developed by the Montana Department of State Lands for this project site. As well, the Red Lodge Zoological Society developed an extensive master plan detailing the development of the park and zoo at the reclaimed area. The two entities are working together on this project.

The selected alternatives appear reasonable. No irrigation will take place on the landfill site, to prevent leachate from reaching the groundwater. Any structures built in this area will be properly vented to allow the escape of methane gas which may be produced through the decomposition of the solid waste.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this portion of the entire Park Development Project is $241,930. This grant will provide 41% of the revenue at $100,000. The remaining $141,930 has not been secured. A grant proposal for this amount will be made to the Legacy Program. Of the $241,930, $11,000 will be for contract administration and professional costs. Of the remaining funds, $197,560 will be for labor and material costs for plants and the irrigation supplies, and $33,370 for inflation and contingency. These cost estimates appear reasonable and adequate.

The total estimated cost for the entire reclamation park development and zoo project is over $2 million. The $100,000 grant represents 5% of that cost. Funds committed for the project include $103,860 from the Land and Water Conservation Fund Grant, private donations and Carbon County. The Department of State Lands will contribute $50,000. A fund raiser is being timed to raise money for the remainder of the park and zoo complex.

ENVIRONMENTAL IMPACT ASSESSMENT:

The vegetative plantings and irrigation system will help to stabilize the reclamation work. Without this stabilization, wind erosion and surface runoff could erode the reclamation area, resulting in airborne particulates and potential adverse water quality impacts to Rock Creek. This stabilization effort will prevent those problems and will result in long term positive environmental effects. Some short-term adverse effects may result from construction activities, but they will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from the vegetative plantings and irrigation system include the improvement of the land quality by stabilizing the reclaimed area which will result in erosion control and improvement to the water quality of Rock Creek. This improved water quality will enhance fish and wildlife habitat and improve recreational opportunities. By integrating with groundwater, water in Rock Creek will be conserved and more will be available as an agricultural water supply. New business and employment opportunities will be increased through the development of the park and zoo complex.

RECOMMENDATION:

DNRC recommends a $100,000 grant providing the remaining $141,930 of the project cost is secured from other funding sources by January, 1995.

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APPLICANT NAME: City of [illegible]

PROJECT ACTIVITY NAME: Sewage Pump and Lift Station Improvements

AMOUNT REQUESTED: $80,000 [illegible], $80,000 [illegible]

TOTAL PROJECT COST: [illegible]

AMOUNT RECOMMENDED: [illegible]

PROJECT DESCRIPTION:

[illegible] Belt Creek, which occasionally floods. The last two floods [illegible] inundates the city's main sewage lift station and removes [illegible] When the lift station is out of service, most of Belt's raw sewage [illegible] the lift station bypass or is backed up into the basements [illegible] sewer crossing with the line laid on the bottom [illegible] either of the last two floods but certainly is [illegible] flow in Belt Creek. If the line were to [illegible] Belt would be discharged directly into Belt Creek. In [illegible] public health of Belt and area residents; degradation [illegible] of the creek; and the potential effects of such [illegible] gravity sewer main crossing of Belt Creek.

[illegible] of (1) a gravity bypass line of the main lift [illegible] out of the floodway), and (2) a new lift [illegible] sewer crossing of Belt Creek.

TECHNICAL FEASIBILITY ASSESSMENT:

No reasonable alternatives exist for bypassing the main lift station, which is vulnerable to flooding. The other portion of the project, however, eliminating or protecting the main gravity sewer crossing of Belt Creek, does require careful consideration of alternatives. One alternative, that is recommended by Belt's engineer, is to intercept the gravity system line before it crosses Belt Creek and construct a lift station and force main that will pump directly to the city's lagoon system. Another alternative with possible merit is to install an inverted syphon across Belt Creek in place of the existing gravity line. The pipes in the syphon would have to be placed below the channel of Belt Creek for protection from future flooding. At this point only very preliminary engineering has been completed on the project. The system alternative will need to be studied in detail during the design phase.

The design for all proposed improvements will have to be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB agrees with construction of a gravity bypass line around the main lift station. However, given the rather infrequent major flooding of the area (only twice in the last 20 years), the WQB questions the need to replace the gravity sewer crossing of Belt Creek. If the crossing is replaced, however, the WQB feels that a properly designed and constructed inverted syphon should at least be considered since if feasible it would probably be preferable to construction of another lift station. The proposed project is quite straightforward from a technical standpoint and regardless of which alternative is selected, the project is technically feasible.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $160,000 of which $130,800 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a grant of $80,000 and a loan of $80,000. The applicant has indicated a willingness to accept a grant of less than requested and a proportionately larger loan, if necessary, to insure timely completion of the project. The estimated project costs seem realistic and reasonable and it appears that the most cost effective alternatives were chosen.

The only funding sources for this project are the DNRC water development program loan and grant funds. Belt will bond for repayment of the loan portion of the funding and sewer rates will be increased to meet the indebtedness. The city can issue G.O., Revenue or SID bonds. An increase in sewer use rates of the magnitude proposed by the city would require PSC approval.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. Correcting the gravity sewer crossing of Belt Creek will involve some instream work and will result in an unavoidable, short duration increase in turbidity in Belt Creek. Belt will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local conservation district and a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB for the instream work. The above permitting processes are structured to minimize the impacts of necessary instream construction activities.

Construction of the proposed improvements would have a positive impact on the environment since potential hazards to public health and potential threats to water quality would be eliminated or at least minimized.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit most of the residents of Belt. However, because of water quality benefits, all downstream water users, fish and wildlife, and indirectly, the citizens of Montana will benefit from the project.

Eliminating the problem of sewage backing up into basements during periods of flooding of Belt Creek will prevent disease and prevent property damage. Reducing the possibility of a raw sewage discharge into Belt Creek during periods of flooding will prevent disease, improve water quality, and minimize impacts on downstream fish and wildlife. It should be recognized, however, that the flooding-caused raw sewage discharge to Belt Creek would be an infrequent occurence that may happen only once every several years.

RECOMMENDATION:

The DNRC recommends a grant of $33,000 and a loan of $127,000, contingent upon Belt passing the necessary bond issue. Any reduction in scope of work should result in a proportionate reduction in grant and any reduction in scope should not affect the proposed improvements of highest priority.

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APPLICANT NAME: City of Polson

PROJECT/ACTIVITY NAME: South Polson Water Collection Project

AMOUNT REQUESTED: $200,000 grant

TOTAL PROJECT COST: $200,000

AMOUNT RECOMMENDED: $42,000 grant, $158,000 loan

PROJECT DESCRIPTION:

Several areas in Polson have historically suffered from the effects of high groundwater and surfacing groundwater (seeps). As early as 1915, studies have identified the groundwater problems in this area of the city. In 1981 the Montana Water Resources Research Center funded the School of Geology at the University of Montana to study the groundwater in Polson. This report identified the major contributing sources as leakage from Pablo Reservoir and area canals, and recommended a properly designed local drainage system or series of drainage systems as the only practical solution to the problem.

The high groundwater in the south Polson area results in financial losses to area residents, lowered land values and a loss of tax revenues to the city. During high groundwater periods many basements are flooded. The majority of water damage claims made to local insurance companies are for seepage, which is not normally covered by household insurance. Most homes are now being built without basements, which costs the owner more for the same usable space as a home with a basement. The high groundwater in combination with cold has resulted in unusually severe frost heave causing more frequent street and sidewalk repair. Finally, in some areas of the city groundwater is surfacing, causing chronically swampy conditions and insect breeding grounds.

Generally, the area of south Polson having high groundwater covers several city blocks. However, the area around Twelfth Avenue to Fourteenth Avenue between Second Street East and Fifth Street East, appears to have the most severe problem. A large seep exists in the area and as a result the area is currently an unusable, swampy area.

The proposed project consists primarily of design and construction of a subsurface drainage system, with surface inlets, that will collect subsurface groundwater and surfaced groundwater. The system will be constructed using approximately 2,000 feet of 12-inch perforated laterals and 2,440 feet of 30-inch reinforced concrete pipe. The laterals will be connected to the 30-inch collector which will be connected to the existing 36-inch storm drain that runs down Ninth Avenue to the west and into the Flathead River. Both storm runoff and infiltrating groundwater will be carried by the proposed system. Polson plans to install, in the future at its own expense, numerous additional perforated pipe laterals to this system in order to achieve lowering of the groundwater table in the area.

TECHNICAL FEASIBILITY ASSESSMENT:

Earlier studies of the high groundwater problem in Polson have indicated that subsurface interception of the groundwaters and drainage of the collected waters out of the area is the one practical and effective method of solving the problems. Similar projects in other areas of Polson have been successful. As for this particular proposed project, only preliminary engineering has been completed at this time. The exact location, number and size, etc., of laterals and other questions will be addressed during design. The

proposed groundwater drainage system will lower the groundwater table in the seep area and above and along the drain, intercept and carry away collected surface water in the area and provide a physical connection between the high groundwater and seep area and the existing main storm drain on Ninth Avenue. Completion of this main drain will allow a major seep area to be dewatered in the near future and a rather large high groundwater area to be dewatered over the next several years. Without the drain there is no way to transport collected surface and groundwaters out of the area. The main drain will be constructed in Thirteenth Avenue for some two blocks and in Second Street East for some four blocks, so major frost heaving on the six block section of those two streets should be reduced and possibly eliminated.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $200,000 of which $185,174 are costs of construction and contingencies and the balance is engineering and administration. The application is for a grant of $200,000.

The city has indicated it would consider a loan for a portion of the grant amount requested, contingent on their ability to repay the debt. A Special Improvement District (SID) may have to be formed in the benefited area in order for the city to pay a significant portion of the project costs. The estimated costs appear to be realistic and the subsurface drain method appears to be the most cost effective and practical way to lower the area groundwater.

ENVIRONMENTAL IMPACT ASSESSMENT:

Other than the usual short-term impacts associated with construction projects, this project should result in positive environmental impacts. Groundwater draining through system will be of generally good quality and should not significantly reduce the quality of the ground and storm water currently being discharged from the existing storm drainage system. Beneficial impacts will result from a lowered groundwater table. Developable land will be created within the city, which will result in more revenue for the city through increased land values and development of improvements on the land. Value of city property in the area will also increase as a result of the lowered water table.

SUMMARY OF PUBLIC BENEFITS:

Primary benefits will be realized by Polson and area residents. The major benefits include improving land quality and value, prevention of property damage, providing new employment opportunities, and prevention of disease. New employment opportunities will result from the residential building and street construction that will occur in the affected area. Elimination of the swampy areas will prevent disease. Polson will benefit from the increased taxable valuation of the private property affected.

RECOMMENDATION:

The DNRC recommends a grant of $42,000 and a loan of $158,000. The grant and loan should be conditioned on Polson forming an SID in the area to repay the loan amount or the grant conditioned on the city securing the amount of the loan from another funding source. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

APPLICANT NAME: Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Streambank Reclamation Program

AMOUNT REQUESTED: $55,000 Grant

TOTAL PROJECT COST: $55,000

AMOUNT RECOMMENDED: $38,500 Grant

PROJECT DESCRIPTION:

The Conservation Districts Division of the Montana Department of Natural Resources and Conservation proposes to provide funding to conservation districts for developing plans to reclaim streambanks and adjacent areas which have been damaged primarily from past placer mining activities. Types of reclamation activities will include vegetation, installation of erosion control measures, and physical alteration of sites to return them to their proper grade and slope. Conservation Districts Division personnel will provide contract administration and Soil Conservation Service personnel will provide assistance in developing reclamation plans. Private consultants may be hired to write some plans. Plan implementation will be done by the conservation district, the Soil Conservation Service, and possibly by contracted labor.

Prior to the passage of the Natural Streambed and Land Preservation Act in 1975, placer mining activities were unregulated, resulting in significant environmental damage to streambanks and riparian areas. These sites have been the source of a considerable amount of environmental degradation over the years. Erosion has been a major problem on many sites where the soil has been displaced and left bare and unvegetated. Siltation and sedimentation of nearby streams has affected water quality, land quality and fish and wildlife habitat, as well as domestic and agricultural water supplies. This degradation of habitat has resulted in fewer wildlife numbers and decreased recreational area and opportunity. Surrounding vegetation has been altered and, in some cases, the areas infested with weeds. The aesthetic value of these areas has been affected by the physical remains of the mining and associated activities.

Results of the project will be the cessation of the environmental damage now occurring at these sites.

TECHNICAL FEASIBILITY ASSESSMENT:

Because no sites have yet been selected to receive funds for reclamation, it is not possible to assess the specific technical feasibility of the selected alternatives.

FINANCIAL FEASIBILITY ASSESSMENT:

A $55,000 grant has been requested, which will be used to fund about five separate reclamation projects at approximately $11,000 per project. Soil Conservation Service cost estimates were used to establish the funding amounts. Of the $11,000, approximately $3,000 will be for engineering and travel, $3,000 for heavy equipment rental and labor, and $4,000 for materials such as pipes, culverts and vegetation. $1,000 is provided for contingency. Soil Conservation Service personnel, conservation district personnel and landowners will provide an unspecified amount of in-kind services in the form of technical services and labor. It is not possible to determine the adequacy of the budget, since the specific needs of each site are not yet known.

ENVIRONMENTAL IMPACT ASSESSMENT:

Long-term adverse environmental effects in the form of water quality degradation, soil erosion, and loss of fish and wildlife habitat will continue if placer mine sites are not reclaimed. Some short-term adverse impacts may occur during the reclamation process, but long-term environmental impacts from the reclamation will be very positive in the form of improved water and land quality.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from these reclamation projects will include solving an identified soil erosion and tailings pollution problem, and improving soil and water quality by preventing erosion and sedimentation. As a result domestic and agricultural water supplies will also be improved while the land resource is conserved. Through stabilizing streambanks with vegetation, fish and wildlife habitat will be improved, resulting in improved recreation opportunities and protection of property.

RECOMMENDATION

DNRC recommends a $38,500 grant.

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APPLICANT NAME: Town of Fairfield

PROJECT/ACTIVITY NAME: Fairfield Open Ditch Conversion

AMOUNT REQUESTED: $115,000

TOTAL PROJECT COST: $136,400

AMOUNT RECOMMENDED: $80,500 Grant and $34,500 Loan

PROJECT DESCRIPTION:

Fairfield has requested grant funds to convert two open irrigation drains to a buried pipe drain system. The 3,150 feet of open drain ditches are located on town property adjacent to residential areas in the town. The ditches are 10 feet deep, 6 feet wide at the bottom and have steep side slopes. They are part of the Greenfield Irrigation District drain system. The district is cooperating with the community in this project and will provide engineering, administration and act as the contractor.

The primary reason the town is promoting this project is to eliminate the hazard to eighteen children living in the immediate area. In addition, local health officials have determined the drains present a health hazard because they seep and water standing adjacent to residences and nearby shallow wells becomes polluted.

TECHNICAL FEASIBILITY ASSESSMENT:

The open ditch conversion plan calls for burying concrete and PVC pipe in a gravel envelope to collect both surface and subsurface water. The plan was prepared by the Greenfields Irrigation District staff and the cost estimate is reasonable. Actual construction work will be performed by irrigation district personnel and equipment.

Alternatives to buried drains include relocating the drains or fencing the perimeter. The relocation option would be more costly and would disrupt nearby agricultural operations. Fencing was ruled out because of problems with maintenance of the ditch. Also, fencing will not solve problems associated with standing water.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed project cost is $136,400. Fairfield has requested a $115,000 grant with the remaining $21,400 to be provided by the Greenfield Irrigation District.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction impacts include short-term disruption of air, noise and surface water quality in the construction area. No long-term negative impacts are expected.

The completed project will eliminate 3,150 feet of open ditch adjacent to the town.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will primarily benefit the residents of Fairfield, especially those adjacent to the drain ditches. Primary benefits include: prevention of death and personal injury, improved water quality, removal of a health hazard and erosion control.

RECOMMENDATION:

DNRC recommends a grant of $80,500 and a loan of $34,500 for installation of 3,150 feet of buried drains adjacent to the town. Any reduction in the scope of the proposed project shall result in a proportional decrease in grant funds.

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APPLICANT NAME: Pondera Canal and Reservoir Company

PROJECT/ACTIVITY NAME: Canal Dredging for the Conrad Water Supply

AMOUNT REQUESTED: $50,000

TOTAL PROJECT COST: $50,000

AMOUNT RECOMMENDED: $8,350 Grant and $41,650 Loan

PROJECT DESCRIPTION:

The Pondera Canal and Reservoir Company supplies Conrad's water from Lake Frances. The water enters Conrad's intake and treatment facility through a canal from the lake. During the summer of 1984, severe drought reduced the water level in Lake Frances and, consequently, the flow through the canal to Conrad's intake facility. The long-term silt buildup in the canal further aggravated the transmission problem, and by late summer, the supply reaching the intake facility was so minimal that the city was forced at one point to close businesses in the community for a short time. The siltation level of the water was also straining the operation of the city's filtration system. With no drought relief in sight, concern spread that winter temperatures would freeze solid the reduced water level in the canal and shut down Conrad's only water supply. The Governor declared the situation an emergency.

The Company requested permission to submit an emergency application to the water development program for dredging the canal to assure that an adequate water flow reached the city's transmission line year-round, regardless of any reduced level in Lake Frances.

TECHNICAL FEASIBILITY ASSESSMENT:

The Company secured engineering services from the state office of the Soil Conservation Service (SCS). Alternatives to the dredging solution, including pumping to increase the flow from Lake Frances, were discussed with the SCS. The Corps of Engineers was also consulted. The dredging alternative was selected as the most permanent, long-term solution. A suction dredge will pump the slurry from the canal into trenches. The water in the trenches will be filtered and self-flow back into the lake. The Company was given a temporary variance from the water quality standards for turbidity and a NPDES discharge permit for the duration of the work from the Water Quality Bureau of the Department of Health and Environmental Sciences.

FINANCIAL FEASIBILITY ASSESSMENT:

The project cost was based on two bids from companies thoroughly familiar with the nature of the work and with the specialized equipment necessary. A generous contingency was included to accommodate unexpected conditions encountered during the project. Conrad will amortize the debt through an assessment on its shares in the Pondera Canal Company.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no permanent negative environmental impacts from the project. The SCS designed the project to deal appropriately with the short-term effects of the dredging on water quality. The turbidity level of water entering the Conrad intake and treatment system should be improved following the project.

SUMMARY OF PUBLIC BENEFITS:

The primary benefit from the project will be a dependable water supply for approximately 4,000 people in and near the community of Conrad and improved water quality.

RECOMMENDATION:

The Department recommends a grant of $8,350 for the project and a loan of $41,650. The grant will be reduced proportionately to any reduction in the loan amount.

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APPLICANT NAME: Montana Bureau of Mines and Geology

PROJECT/ACTIVITY NAME: Butte Mine-Flooding Monitoring

AMOUNT REQUESTED: $99,527 Grant

TOTAL PROJECT COST: $127,418

AMOUNT RECOMMENDED: $96,000 Grant

PROJECT DESCRIPTION:

The Montana Bureau of Mines and Geology proposes to monitor and evaluate the impact of the mine flooding in Butte on groundwater quality. All previous monitoring has consisted of sampling only the top five feet of water in accessible shafts. Samples for this project will be taken from deeper areas to determine the water quality profile of the entire water column. Routine samples will also be taken from shallow aquifer monitoring wells located along Silver Bow Creek. These areas will be the first impacted if water levels in the mines rise excessively. The information gathered will allow a prediction of how severe the toxic heavy metal contamination problem will become in the deep and shallow groundwater systems. This information will be used by local government officials, Department of State Lands, Department of Health and Environmental Sciences, Department of Fish, Wildlife and Parks, the national mining industry, the Anaconda Company, U.S. Geological Survey, EPA and citizens of the Upper Clark Fork Drainage.

The 1983 Legislature appropriated $60,000 to the Montana Bureau of Mines and Geology to participate with the Montana Department of State Lands and the Anaconda Minerals Company in their monitoring of the underground mine flooding. The money was used for surface sampling and installation of monitoring wells. This project proposal will expand the level of monitoring and will utilize the information and data generated by the 1983 project.

TECHNICAL FEASIBILITY ASSESSMENT:

Special depth profiling equipment will have to be purchased to evaluate the water quality of the water in the mine shafts. This equipment will also be useful to other state agencies involved with groundwater data collection and analysis.

Monitor wells in the shallow aquifer along Silver Bow Creek have been installed, but routine sampling and analysis has not been adequate due to insufficient funding.

The selected alternatives appear to be the most feasible and will provide useful information in two years. The Montana Bureau of Mines and Geology plans to continue low-level monitoring of the mine flooding situation beyond the end of the study.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $127,418, with the Montana Bureau of Mines and Geology providing $27,891 in matching money for salaries. The $99,527 grant funds will cover professional personnel costs at $43,975, and chemical analyses, travel and supplies at $49,918. Cost estimates are reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

No long- or short-term adverse environmental impacts will result from the project. Rather the results will provide an assessment of the toxicity of heavy metals in groundwater associated with the Butte mine flooding. Results from the study may help to identify strategies to prevent impacts from the existing contamination problem, thereby providing positive environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

Benefits from using the data from this project may include prevention of public and private property damage, prevention of degradation of surface water quality and fish and wildlife habitat, and prevention of health problems associated with exposure to toxic metals.

RECOMMENDATION:

DNRC recommends a $96,000 grant.

APPLICANT NAME: Town of Dutton

PROJECT/ACTIVITY NAME: Water Supply Study-Phase II

AMOUNT REQUESTED: $29,700 Grant

TOTAL PROJECT COST: $29,700

AMOUNT RECOMMENDED: $19,300 Grant

PROJECT DESCRIPTION:

The Town of Dutton proposes completion of a water supply study to address several problems with their existing system. Dutton provides water to approximately 400 people from a single, shallow well about 105 feet from the banks of the Teton River. The town has been concerned about the stability of the well site because of fluctuation in the stream channel and would also very much like to improve their water quality. The existing supply contains high amounts of iron and manganese.

The 1983 Legislature approved $41,900 for this project. A contract was signed with the town which provided for a two-phase study. Phase I is to evaluate the severity of the problems at the existing supply site and investigate other potential sources and Phase II to complete preliminary engineering work for improvements to the existing site or a new source selected by the town. Phase I was completed and approved by the town and $12,200 was advanced by the Department to pay for the work. A Phase II Scope of Work for preliminary engineering for a groundwater source on a state section located about 18 miles west of Dutton was approved by the town and the Department in February, 1984 and subsequently expanded to enable a more thorough investigation of the Tiber Water District supply. The budget for Phase II was $21,700, of which $8,172 has been billed to Dutton. The work on the Tiber Water District supply is the basis of an application from Dutton for construction funds to complete the hookup with the Tiber system.

TECHNICAL FEASIBILITY ASSESSMENT:

A feasibility study to investigate the threat of erosion to Dutton's water supply and to compare the existing source to alternative sources has been a reasonable approach. Under Phase I of the study it was determined that the Teton River would not encroach upon the well and pump station for 15 to 20 years. Riprap of the Teton River bank was recommended to protect the water supply. The study also indicated that the town's supply exceeded the secondary drinking water standards for iron, manganese, total dissolved solids and sulfates. These items result in an undesirable supply but do not pose an unsafe supply. The water quality can be enhanced through treatment.

The Phase I report suggested that Dutton's existing supply can be protected from the threat of erosion and treated to enhance the quality for approximately 20% less capital cost than that for developing a new supply. The report recommended development of a new supply if the nearby Town of Brady would participate in a joint project. If Brady would not participate, the report suggested a phased approach to embankment protection and installation of treatment facilities.

The town did not select the least-cost alternative as outlined in the Phase I report. Instead, they decided to pursue development of a new supply without the participation of the Town of Brady. Well tests at the highest priority location for a new supply failed to result in an acceptable site. Dutton is now looking at connection with the existing Tiber water system for their new water supply.

Dutton's decision to develop a new water source is justified from the standpoint of the community's desire for better-tasting water and to avoid any chance of losing their existing water supply to the Teton River. However, the existing source and delivery facilities are adequate and can be reasonably protected and enhanced at a lower cost. A new water supply is not a critical item for the town to provide adequate municipal water service.

FINANCIAL FEASIBILITY ASSESSMENT:

The 1983 Legislature approved $41,900 for this project. Dutton was advanced $12,200 in grant funds for completion of Phase I of the study. The budget for Phase II of the study was $21,700 of which $8,172 has been billed to Dutton. The town has not received grant funds for Phase II. The remaining $29,700 grant is unavailable to the community because of limited coal severance tax proceeds. They have reapplied for the balance of grant funds not received under their 1983 grant.

ENVIRONMENTAL IMPACT ASSESSMENT:

There are no major short- or long-term negative impacts associated with the study. The impacts of any construction recommended by the study should be addressed in the design phase.

SUMMARY OF PUBLIC BENEFITS:

The residents of Dutton and several rural water users located near the transmission line will receive benefits from this study. Primary benefits include: prevention of property damage, improved water quality and improved domestic water supply.

RECOMMENDATION:

Phase I of this study is complete and has been funded under a Water Development Program grant. This portion of the study provided a needed assessment of the town's existing supply and provided cost estimates of various supply alternatives.

Phase II addresses further refinement of new water supply alternatives identified in Phase I. This activity is less valuable than the initial study (as indicated in the ranking) since it has been determined the existing supply is adequate and can be protected and treated. DNRC recommends a grant of $19,300 for Phase II of the study.

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APPLICANT NAME: City of Plentywood

PROJECT/ACTIVITY NAME: Water System Improvement Feasibility Study

AMOUNT REQUESTED: $53,400 grant

TOTAL PROJECT COST: $53,400

AMOUNT RECOMMENDED: $37,000 grant

PROJECT DESCRIPTION:

Plentywood provides domestic water and fire protection for its approximately 2,475 residents. The city's water system consists of eight wells, storage facilities and several thousand feet of distribution lines. Since 1978 the city has had an inadequate supply of water during the summer months and has imposed rationing. Plentywood's water supply cannot provide sufficient fire flows during the summer months. In addition water from the present wells, although in compliance with the standards of the Safe Drinking Water Act, is poor in quality and its palatability is borderline. Plentywood needs and desires to find a supplemental or alternate source of water that is of higher quality than its present wells. In addition the city needs to have its entire system evaluated in light of present and future needs and have solutions provided for such problems as the excessive amount of water lost from the system.

The proposed project consists of a comprehensive engineering study and evaluation of the water system, including determining the feasibility of finding and developing a new water source of acceptable quality and quantity for Plentywood. The study will address, among other things, system efficiency, storage capacity, supply, present and future population and water use, fire protection needs, improvement needs, costs of improvements, system deficiences, improvement alternatives, user fees and financing options. The study will explore the cost and technical feasibility of developing a surface water source at nearby proposed Carroll Dam, developing additional shallow wells, deep wells, and wells in the ancestral Missouri River bed near Dagmar.

TECHNICAL FEASIBILITY ASSESSMENT:

The proposed project, a comprehensive engineering study of the Plentywood water system, is technically feasible and appropriate. The proposed scope of the study and alternatives to be considered are also appropriate. The study, with its conclusions and recommendations, will provide the city of Plentywood with the information the city needs to solve its present water problems and meet its future domestic water needs.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $53,400 of which $48,780 is for consultant services, including $18,000 for test well drilling and test pumping, and the remainder is contingency and administrative costs. The city has requested a grant for the entire estimated project cost and is not providing any local funds for the project. The estimated costs appear to be quite high for the project. Open competition for the consulting services would probably effectively reduce the study costs.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study should produce no environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

The study will benefit the residents of Plentywood. The major benefits associated with the study relate to the upgrading of the water system that will follow the study. The upgrading program, if implemented could theoretically have the following benefits: adding or improving domestic water supply, resource conservation (from eliminating the excessive loss of water), and providing new business opportunities. A lack of adequate quality and quantity water hinders economic development.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $37,000, contingent upon Plentywood securing the remaining necessary funds. Any reduction in scope should result in a proportionately smaller grant and should not materially affect the quality of the study.

APPLICANT NAME: East Bench Irrigation District

PROJECT/ACTIVITY NAME: Clark Canyon Dam Hydropower Feasibility Study

AMOUNT REQUESTED: $60,000 Grant

TOTAL PROJECT COST: $60,000

AMOUNT RECOMMENDED: $39,000 Grant

PROJECT DESCRIPTION:

The Clark Canyon Reservoir has a surface area of 6,600 acres and a storage capacity of 257,152 acre-feet of water. The dam is 132 feet high. This combination of facts has created interest in the building of a hydropower unit at a site below the dam. This project is for the study, preliminary design and license application work necessary to apply for a construction permit from the Federal Energy Regulatory Commission (FERC). The East Bench Irrigation District is a user of water from the reservoir and has acquired a "first-in-time municipal preference" designation from FERC for consideration of licensing.

TECHNICAL FEASIBILITY ASSESSMENT:

In the early years of the dam's life a study was made by the Bureau of Reclamation for a small hydropower site. The study indicated that the site was adequate for the development; however, financially the project was not sound because the power companies did not have a good rate structure for the purchase of power. The study is feasible and much of the information assembled by the Bureau of Reclamation is usable. The design and structural tests of the dam are still available, which will also assist in this study.

FINANCIAL FEASIBILITY ASSESSMENT:

Estimates of costs for the study have been obtained from various consulting engineering firms. These estimates have averaged $55,000; with contingencies added, the cost given is $60,000. With the amount of preliminary information available, it appears that this cost is still high.

Should licensing be acquired and the project constructed, the East Bench Irrigation District will enter into a contract to sell the power. The profit gained from the project will revert to the District and be used to offset irrigation costs that continue to rise.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no positive or negative impacts from this study.

SUMMARY OF PUBLIC BENEFITS:

This study will have a direct benefit to the 75 users in the East Bench Irrigation District. If a hydropower unit were installed, it would have major benefits to the 75 users and economic benefits to a community of 4,000.

RECOMMENDATION:

The Clark Canyon Dam has a high potential for hydropower production and the East Bench Irrigation District is a logical developer of the source. DNRC recommends a grant of $39,000 be made for the study which shall be of such detail and quality to make an application to FERC for licensing. A minimum of two bids for the study will be required by DNRC.

APPLICANT NAME: Private Individual

PROJECT/ACTIVITY NAME: Sprinkler Irrigation System Development

AMOUNT REQUESTED: $ 7,500 Grant and $22,500 Loan

TOTAL PROJECT COST: $30,000

AMOUNT RECOMMENDED: $ 2,500 Grant and $27,500 Loan

PROJECT DESCRIPTION:

This is a family farm that has been in the same family since 1924 and added to periodically up to its 6,000 acre size today. The ranch has historically been short of adequate hay supplies; in recent years it became evident through soil surveys that this 75-acre parcel was of irrigable quality. There is water available to adequately irrigate the land. A gravity flow system was proposed and could be implemented; however, it would require an easement across a neighbor's property. That easement was not obtained so the project will include the installation of a low pressure pump, 2,610 feet of mainline pipe, two wheel line sprinkler units and a small quantity of hand line.

TECHNICAL FEASIBILITY ASSESSMENT:

There is need established; economic conditions in agriculture have been poor and no relief is in sight. The conversion to irrigated hay land will make a family farm more self-supporting and give higher and better use to soil and water. The Soil Conservation Service has determined the feasibility of the project, done preliminary design work, established water requirements, and will monitor construction.

FINANCIAL FEASIBILITY ASSESSMENT:

The applicant is financially sound with small liabilities compared to net worth. The ranch is operated basically on a break-even basis. The implementation of this project will create sufficient income to service the debt created and give a positive cash flow of approximately $4,000 from the project. Developmental costs are $400 per acre, which is high; however, the quality and value of land will increase significantly. Overall the project is financially feasible.

Security is offered as interest in real estate which will provide adequate collateral for this loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts created by this project.

SUMMARY OF PUBLIC BENEFITS:

Efficient use of soil and water is a benefit to all people. Beautification of a somewhat desolate area will give a general public benefit to Montanans and tourists alike. Wildlife forage will be increased.

RECOMMENDATION:

DNRC recommends funding this project through a grant of $2,500 and a loan of $27,500.

APPLICANT NAME: City of Hamilton

PROJECT/ACTIVITY NAME: Water System Renovation

AMOUNT REQUESTED: $49,068 grant

TOTAL PROJECT COST: $98,136

AMOUNT RECOMMENDED: $24,500 grant, $24,568 loan

PROJECT DESCRIPTION:

Hamilton presently has a population of about 2,660. The existing water system was purchased from Valley Water Company in 1982 and consists of five wells, a storage tank and several miles of distribution lines. When purchased, the entire system was in a deteriorated condition; it loses an estimated 333 million gallons of water per year due to leaks. The system needs an additional well, additional storage, looping, new (and additional) control valves and fire hydrants and miles of new distribution lines. To correct the system's many deficiencies will cost several million dollars. Since it was impractical and financially impossible for Hamilton to finance all of the needed improvements in one upgrading project, the needed improvements were prioritized and 5-year and 20-year upgrading plans were developed. This particular project fits into the 5-year upgrading plan. The main line to be replaced is deteriorated and undersized (4-inch and 6-inch line) line serving the north central portion of the city—from Main Street north eight blocks on 5th to Adirondack Street.

The proposed project consists of design and construction of 2,750 feet of new 10-inch main line, control (gate) valves and fire hydrants. Service connections to the new line will be installed as part of a separate, future project.

TECHNICAL FEASIBILITY ASSESSMENT:

In 1981, a consulting engineering firm prepared a "Study and Engineering Report" on the Hamilton water system. At the time of the study the water system was still owned by Valley Water Company. The study was comprehensive; it addressed the water system deficiencies and outlined a recommended program for upgrading. The line being replaced with this project was an improvement recommended in the study. Because of the nature of the problem in this area of the city—excessive leakage of undersized lines—consideration of numerous alternative solutions was not appropriate. The only practical solution to the problem was chosen. The city did consider an alternative location for the line, (i.e. in 4th Street instead of 5th Street but chose the 5th Street location because 4th Street had recently been paved). The project is appropriate, technically feasible and will produce the desired effects.

The design for all improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB agrees that the project is needed.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $98,136 of which $84,936 are costs of construction and contingencies and the balance is engineering and administration. The application is for a grant of $49,068. The applicant has indicated it is unwilling to accept a loan for a portion of the requested grant amount. The estimated project costs appear to be realistic and reasonable and it appears as though the most cost effective alternative was chosen. The sources of funding for this project are the DNRC water development program grant funds and local budgeted funds.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. Positive effects are the improved carrying capacity of the lines and the elimination of leaks.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Hamilton. The major benefits are resource conservation (eliminating the system leakage), and improving the availability of the resource (increasing line sizes will improve water quantity and pressures in the area).

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $24,500 and a loan of $24,568 contingent upon Hamilton securing the remaining project funds from other sources or passing the necessary bond issue for the loan repayment. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: The City of Miles City

PROJECT/ACTIVITY NAME: Park Irrigation System Conversion

AMOUNT REQUESTED: $5,562 Grant

TOTAL PROJECT COST: $5,562

AMOUNT RECOMMENDED: $3,800 Grant

PROJECT DESCRIPTION:

The Slusher Recreational Complex is a part of Bender Park consisting of 8.5 acres covered with grass and used chiefly for city baseball and softball programs. Presently the complex is being irrigated with treated city water. This project proposes to drill two wells into shallow aquifers, install submersible pumps and tie into the existing sprinkler system, thus closing off the city water source.

TECHNICAL FEASIBILITY ASSESSMENT:

The need of the project is economic and efficient use of water. Currently, treated city water is used to irrigate the complex, requiring 3,508,000 gallons per season. During much of the season the quantity required is not available as households on high usage diminish the pressure; then the supply is inadequate. This also affects the households, as the water needed for the complex lowers their pressure and supply. The alternatives were to drill wells or to pipe from the Yellowstone River. Cost estimates strongly favor the wells. A southeastern Montana water study suggests 50 to 100 gpm is normally available at shallow depths (less than 25 ft.) in this area. This water supply from two wells will adequately operate the system. Permits needed for the wells have not been acquired, but have been discussed with permitting authorities in sufficient depth to indicate they can be acquired if the grant is made available.

FINANCIAL FEASIBILITY ASSESSMENT:

Today the city's cost of water treatment is $1.086 per 1,000 gallons. At 3,588,000 gallons of use, the actual cost to the city for Slusher Park's water is $3,896 per season. After the installation of the system, electrical costs at today's rates are expected to be only $75 per season. Outside of maintenance, no other costs are anticipated. The project costs were determined by contractors of goods and services as estimates from contractors known by the city to be reputable. Not only is the system a cost-saving project, but it will also efficiently irrigate the complex.

ENVIRONMENTAL IMPACT ASSESMENT:

Any effects on the environment, either positive or negative, will be very small. It is noted from the southeastern Montana water study that underground water quantities are sufficient and no drawdown of other wells in the area should occur.

SUMMARY OF PUBLIC BENEFITS:

This is a major recreation area for baseball and softball in the city of 9,800 people. User days are estimated at 65,000 per year. The water users of the city will directly benefit from the increase in pressure and available water supply. Providing this project is successful as planned, other parks will be converted and ultimately the taxpayers will gain.

RECOMMENDATION:

DNRC recommends a grant of $3,800 be granted for this project contingent upon the city acquiring all permits for the wells.

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APPLICANT NAME: City of Shelby

PROJECT/ACTIVITY NAME: Water Supply Development

AMOUNT REQUESTED: $81,625 Grant

TOTAL PROJECT COST: $326,498

AMOUNT RECOMMENDED: $ 25,000 Grant, $56,625 Loan

PROJECT DESCRIPTION:

Shelby has a population of approximately 3,140. The present water source is a well field containing seven wells located along the Marias River approximately six miles south of Shelby. The wells are relatively shallow and are influenced by the water level in the Marias River. During periods of low flow in the river, the drawdown level in the wells approaches the suction elevation of the pumps. This results in air being pulled into the pumps and the possibility of pump impellor damage due to the effects of cavitation. To prevent damage during these periods, water use restrictions are put into place to reduce demand, and production from the well field is significantly reduced.

The proposed project consists of design and construction of a system for increasing Shelby's water supply. The system includes developing a group of ten low yield wells in the immediate vicinity of the present well field. The low yield wells would be developed with relatively low horsepower pumps and would discharge through a common header to a high service pump station clear well. High service pumps will pump from the clear well into the existing transmission lines from the well field area. The city hopes to increase the capacity of its water supply by an estimated 1 million gallons per day (mgd) with the proposed improvement.

TECHNICAL FEASIBILITY ASSESSMENT:

Seven alternative methods of solving Shelby's water supply problem were considered in the "Water Supply Study" conducted for the city. The alternative that was selected by the city as the most desirable alternative had a slightly higher estimated capital cost (6% higher) than the alternative with the lowest capital cost. An alternative that was not seriously considered is to meet all or part of the maximum daily demand deficit by reducing Shelby's apparently excessive losses. Average daily maximum water use in Shelby is considerably higher than use figures considered typical for small western communities. If major leaks can be located and cost effectively eliminated, the amount of additional supply needed will be significantly reduced.

The chosen alternative appears to be feasible. Data is lacking on the character and quality of the aquifer, the effects of the close spacing (40 feet apart) of the ten low yield wells on the production of each well, the effect of those wells on the existing well field, and the effect on that field of low water levels in the Marias River. Therefore, the effectiveness (production) of the completed system of ten low yield wells is difficult to predict. Shelby has recently bid two of the ten wells and the wells will soon be developed. Data gathered through testing of these wells should answer some of the questions regarding the feasibility of the project. Study of the two wells should be structured to provide as much information as is reasonable about the aquifer, the method, and the effects of the development.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $326,498 of which $279,938 are costs of construction and contingencies and the balance is engineering and administration. The application is for a grant of $81,625 (25% of the total project cost). The estimated project costs seem realistic and reasonable.

The city proposes to fund the local share ($244,873) of project costs by cash on hand and funds raised by two or more consecutive 12% increases in user rates. The city proposes to phase the project to avoid the need for bonding. Shelby does have the authority to issue G.O., Revenue and SID bonds.

ENVIRONMENTAL IMPACT ASSESSMENT:

Since the project is located in essentially the same area as the present well field and since the construction activities to be undertaken with this project are similar in nature to those activities previously undertaken at the present well field, no lasting adverse environmental impacts are anticipated in construction of this project. The impacts of the potential withdrawal of an additional 1 mgd from the Marias River system have not been determined but will be addressed during the water rights permit acquisition process. Shelby will be required to acquire the necessary water rights permit before any monies will be made available for the project.

SUMMARY OF PUBLIC BENEFITS:

Primary benefits would be received by the users of the Shelby water system. The project is intended to correct the water shortage and associated domestic and commercial fire protection problems, correct a potentially severe mechanical problem with pumping equipment in the existing well field and increase water revenues as a result of having more water to sell during low flow periods. Obvious benefits that would result from success of the project are improving domestic water supply, improving the availability of the resource and providing new business opportunities. The improved supply of water may also enhance fire-fighting capabilities.

RECOMMENDATION:

The award of any grant on this project should be conditioned on the following: acquisition by Shelby of appropriate water rights, securing the local share of project costs, receipt of proof of feasibility of the project based on testing of the two experimental wells and receipt of documentation showing that it is not cost effective to reduce water loss (unaccounted for water) in the Shelby water system. The DNRC recommends a grant of $25,000 and a loan of $56,625 for this project. Such grant funds should be made available in proportion to the amount of funds expended from the local share. Any reduction in scope of the project should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

APPLICANT NAME: Cascade County R.I.D. 26 (Sun Prairie Village)

PROJECT ACTIVITY/NAME: Water Transmission Line Replacement

AMOUNT REQUESTED: $200,000 Grant

TOTAL PROJECT COST: $200,000

AMOUNT RECOMMENDED: $33,000 Grant, $167,000 Loan

PROJECT DESCRIPTION:

Cascade County R.I.D. 26 is a public agency which encompasses a rural subdivision called Sun Prairie Village located just south and east of the City of Vaughn in Cascade County. The R.I.D. 26 water system provides water to approximately 250 users. The total system consists of wells, transmission line, storage and several miles of distribution lines. The 10,000-lineal-foot, 8-inch transmission line was apparently improperly installed during the original construction project. As a result, settling and joint separation have occurred which has resulted in many leaks in the line. The excessive leakage not only wastes pumped water and results in higher than necessary power costs but also is responsible for development of soft, spongy ground surface conditions in several areas, which adversely affect farming operations. Approximately 1,000 feet of the line was recently replaced by R.I.D. 26 and the remaining 9,000 feet of line needs to be replaced as soon as possible.

The proposed project consists of design and construction of approximately 9,000 lineal feet of 8-inch water line to replace the remaining portion of the leaking original transmission line.

TECHNICAL FEASIBILITY ASSESSMENT:

Because of the nature of the problem, consideration of numerous alternatives is not appropriate. Replacement of the leaky, improperly installed line is the only solution to the problem. At this point only preliminary engineering has been completed on the project.

The design for the new transmission line will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB agrees with the need for the project and the proposed solution. The proposed project is technically feasible and will produce the desired effects.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $200,000 of which $161,000 are costs of construction and contingencies and the balance is engineering, administration, and financing. The application is for a grant of $200,000. The applicant has indicated a willingness to accept a grant of less than was requested, and a proportionately larger loan, if necessary, to insure timely completion of the project. The estimated costs appear to be realistic and reasonable and the most cost effective alternative was chosen.

The only source of funding identified for this project is the DNRC water development loan and grant program. The applicant has indicated that a county water district would be formed to bond for repayment of any loan portion of the funding; water rates would have to be increased to meet the indebtedness. The water district would be able to issue revenue bonds, upon approval by the district's voters.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with municipal utility projects. Positive environmental impacts will result from replacing the line because of the resultant reduced water loss, reduced power consumption, reduced opportunity for contamination and elimination of the soft, spongy areas that have resulted from the numerous, large leaks along the line.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit the users within R.I.D. 26. Replacement of the leaky transmission line will result in the following public benefits: improved land quality, prevention of property damage, and resource conservation.

RECOMMENDATION:

The DNRC recommends a grant of $33,000 and a loan of $167,000. The funding is contingent on forming either an R.I.D. for this project or a county water and sewer district in order to legally bond for repayment of the loan. If funding for the loan amount is secured from a source other than DNRC, the grant should be made available and the contingency would not apply. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: City of Miles City

PROJECT/ACTIVITY NAME: Recreation Area and Boating Facilities Upgrading

AMOUNT REQUESTED: $36,722 Grant

TOTAL PROJECT COST: $36,722

AMOUNT RECOMMENDED: $26,000 Grant

PROJECT DESCRIPTION:

Spotted Eagle Lake is a part of Spotted Eagle Recreation Area located just south of Miles City across the Tongue River. The area is owned and administered by the city but open to the public as a multi-use recreational area consisting of 123 acres. Phase I of the improvement program centers around the 23-acre lake which provides leisure boating, waterskiing, fishing and swimming (in a buoyed, restricted area where a lifeguard is provided). Boating is restricted to 18 acres of the lake, but there is no protected area for docking. This project provides for the excavation of an old river channel adjoining the lake on the west to allow for docking and slow-speed controlled entry to and exit from the lake. Additionally, a suspension bridge will be constructed across the channel for people to use other areas of the site and a well will be drilled to serve this docking area and picnic facilities. The opening of this channel will add an additional 4.2 acres of boating area to the lake.

TECHNICAL FEASIBILITY ASSESSMENT:

The need is established, since extreme hazards exist to boaters, waterskiiers and fishermen due to the lack of a low-speed start and stop boating point. This is a natural solution to the problem, requires a minor amount of construction, and adds usable water area. The project site has underground water available as well as the normal sources that feed the lake, that is, excess water from the State Fish Hatchery, excess water from irrigation at Fort Keogh, and runoff from local wells that are pumped almost continuously. A concrete docking ramp will be installed and the docks in the existing lake will be moved to the new site. Critical engineering work will be done by the city and county staffs, and project construction will be supervised by them.

FINANCIAL FEASIBILITY ASSESSMENT:

The project does not have any financial application other than cost. All costs have been given as estimates by local contractors as specialists in the field who normally do work for the city. No administrative or legal costs are considered in the request, since they will be provided by the city or county. City personnel and equipment will be used in conjunction with or in addition to contract labor where possible.

ENVIRONMENTAL IMPACT ASSESSMENT:

A minor amount of negative environmental impact will occur during the excavation of the channel as soil materials will mix with the waters. However, this will be a localized situation as the waters do not move readily through the lake or old river bed. The major positive effect will be that the opening of the old river bed will provide a spawning area for northern pike. Additionally, the project will provide a more efficient use of the water supplies.

SUMMARY OF PUBLIC BENEFITS:

This is the only public facility for boating in the area and specifically serves the town of 9,800 population. It is estimated that 200 boats of the waterskiing class are owned in the area. The City Parks Superintendent shows the park to have 23,300 user-days per year. In addition to the general benefits to the public, the project will enhance the safety of boaters, waterskiiers and fishermen. Use of the old river channel will decrease mosquito infestation and breeding thus enhancing public health.

RECOMMENDATION:

To assist in the development of this park for the City of Miles City, DNRC recommends a grant of $26,000.

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APPLICANT NAME: City of Choteau

PROJECT/ACTIVITY NAME: Choteau Water Supply Feasibility Study

AMOUNT REQUESTED: $34,400

TOTAL PROJECT COST: $34,400

AMOUNT RECOMMENDED: No funding

PROJECT DESCRIPTION:

Choteau is an incorporated city of approximately 1,750 people located in Teton County. The city's water supply consists of two shallow wells located along the floodplain of Spring Creek, a tributary of the Teton River. The two wells have only enough capacity to meet existing peak demands. The area has experienced below average precipitation for the last three years, which has resulted in increased irrigation water demand and decreased recharge of their shallow groundwater source. The city is concerned that current trends may result in water use restrictions and even possible depletion of their water source.

Choteau has requested grant funding to investigate the cause of surface and groundwater declines in the Teton River and associated shallow aquifer system. The study is expected to determine the long-term effect on their water supply and establish the need for a supplemental water supply or complete replacement of the existing groundwater source. A major objective of the study is to investigate other sources of water for use by the community in the event they are needed.

The study area includes a one-half-mile-wide tract of land along the Teton River starting at Choteau and extending approximately four miles upstream. The study plan calls for an assessment of water contribution to, and water use from the study area with a determination of water available to proceed downstream. Groundwater flow, use and recharge would be estimated for the area. The study would analyze Choteau's existing water supply system and estimate the costs to develop new water sources.

TECHNICAL FEASIBILITY ASSESSMENT:

The situation of decreasing groundwater levels near the city is supported by the fact that two springs which used to discharge into the city water system no longer flow. Increased demand for water in recent dry years contributes to a lower water table. The city has pointed out that Spring Creek, which consistently provides direct recharge to the shallow aquifer, has dried up twice in 1984. Overall the community's concern over the extent and impact of groundwater depletion is warranted.

The study proposal recognizes that an extensive surface and subsurface area contributes to the recharge and withdrawal from Choteau's water source. However, the immediate need to study the major hydrologic area including the upper Teton River and the ability to obtain useful, reliable results with limited time and money are questionable. The groundwater evaluation in the immediate Choteau area is needed to provide the community with information on the extent and reliability of their current water source. The need for evaluation of alternative sources is not supported at this time since the city has been able to meet peak demands without any restriction. It follows that the community could use the evaluation of their current water source to base decisions on expansion or changes in supply.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the activity is estimated to be $34,400; the entire amount is requested as a grant. The request includes $1,200 for administration; $25,400 for professional/technical costs; $5,800 for equipment, etc.; and $2,000 for contingencies.

The city has indicated they would consider a $20,000 loan if the remaining $14,400 were available as a grant.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study activity will provide some information on the local surface and groundwater resource which could be used to manage future water use. Results of the study will assist the community with efforts to maintain a stable water supply for municipal use. The need for a new city water source and the environmental impacts of developing a new source are unknown at this time.

SUMMARY OF PUBLIC BENEFITS:

The proposed study activity will primarily benefit the residents of Choteau. The effort may improve the availability of the city's domestic water supply. If the present source is inadequate, the study will help eliminate a potential long-term water shortage. Property damage and personal injury may be avoided if the existing water supply is inadequate and a new supply is identified.

RECOMMENDATION:

The DNRC recommends no funding for this study since the Upper Teton study proposed by the Teton Conservation District includes provisions to assess potential groundwater supply problems suspected by the city of Choteau. The city can use the resulting information to develop a long-term water supply strategy.

APPLICANT NAME: Gore Hill County Water District

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $81,000 Grant, $81,000 Loan

TOTAL PROJECT COST: $162,000

AMOUNT RECOMMENDED: $27,000 Grant, $135,000 Loan

PROJECT DESCRIPTION

The Gore Hill County Water District is a public agency located in Cascade County. The district includes four major subdivisions, Pretty Prairie, Western Estates, Castle Heights and Anderson Tracts, and provides water to 175 users located throughout the four subdivisions. The total system consists of wells, two storage tanks and several miles of distribution lines.

Because of a lack of looping of the water lines, several areas served by dead end lines experience low water pressures and unacceptably low residual chlorine levels. In addition, because of a lack of individual water meters, the per capita water usage is somewhat high. Since users presently pay a flat rate regardless of the amount of water used, it is suspected that a considerable amount of water is wasted or at least inefficiently used. Inefficient use of water results in excessive pumping costs and wear of pumping equipment. The present system also lacks fire hydrants. The area consists of small acreages and several residents keep livestock and irrigate a considerable amount of land. This use of water could result in contamination of the water system if an event occurs that causes back-syphonage.

The proposed project consists of design and construction of new water mains (to accomplish looping), installation of water meters, installation of fire hydrants and installation of check valves on individual service lines.

TECHNICAL FEASIBILITY ASSESSMENT:

Because of the nature of the problems in the Gore Hill County Water District, consideration of numerous alternatives is not needed. Dead end line problems can only be corrected by looping. Excessive consumptive water use can only be corrected by installation of individual water meters and lack of fire hydrants can only be corrected by installation of hydrants. At this point only preliminary engineering has been completed on the project.

The design for all proposed improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. Conceptually the WQB agrees with the entire proposed project, as long as the present water system can handle the fire flows. The proposed project is technically feasible and will probably produce the desired effects.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $162,000 of which $139,300 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a grant of $81,000 and a loan of $81,000. The district has indicated a willingness to accept a grant less than was requested and a proportionately larger loan, if necessary, to insure timely completion of the project. The estimated costs seem realistic and reasonable and it appears as though the most cost effective alternative was chosen.

The only source of funding identified for this project is the DNRC water development loan and grant program. The district will bond for repayment of the loan portion of the funding and water rates will be increased to meet the indebtedness. The district can issue revenue bonds, upon approval by the district's voters.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with municipal utility construction projects. Positive environmental impacts will result from the looping of lines (which will enhance chlorination effectiveness) and installation of individual water meters (which will encourage water conservation). Installation of fire hydrants will reduce the potential for fire-related loss of life and property. Backflow preventers will reduce the potential for contamination of the water system and resultant disease outbreaks.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will benefit primarily the users within the district. Looping of lines, which will improve disinfection effectiveness, and installation of individual backflow preventers will both certainly reduce the potential for disease. These improvements will also improve drinking water quality and availability of water to users. Installing fire hydrants will improve fire fighting capability and may aid in prevention of personal injury and property damage. Installing individual water meters may reduce consumption of water thereby effecting conservation of the resource (water supply).

RECOMMENDATION:

The DNRC recommends a grant of $27,000 and a loan of $135,000, contingent upon the Gore Hill County Water District passing the necessary bond issue. Any reduction in scope of this project should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Town of Scobey

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $8,990 Grant

TOTAL PROJECT COST: $35,960

AMOUNT RECOMMENDED: $5,000 Grant, $3,990 Loan

PROJECT DESCRIPTION:

Scobey presently has a population of 1,380. The existing water system consists of a well field containing three wells, a booster pump station, transmission line, a 100,000-gallon elevated storge tank and several miles of distribution line. Because some 2,100 feet of transmission line from the wells to the booster pump station is undersized, the wells cannot supply their design flows to the booster pump station wet well. As a result the booster pump station cannot operate at capacity. The undersized transmission line(s) have caused inefficient operation of the water system and a loss of fire fighting capacity. In order to solve the problem, the carrying capacity of the existing transmission line(s) needs to be increased.

The proposed project consists of design and construction of 450 feet of 8-inch line from wells 4 and 5 to the main transmission line and 1,650 feet of 10-inch line to replace the main transmission line to the booster pump station, 3 control (gate valves) and appurtenances.

TECHNICAL FEASIBILITY ASSESSMENT:

An engineering evaluation was made of these water system problems and alternative solutions were considered. The apparent most cost effective, technically feasible alternative was chosen. The proposed project is technically feasible and will solve the identified problem.

The design of the proposed improvements will be reviewed by the Water Quality Bureau (WQB) prior to commencement of construction. Conceptually, the WQB agrees with the need for the project and the proposed solution.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $35,960 of which $32,660 are costs of construction and contingencies and the balance is for engineering and administration. The application is for a grant of $8,990. Scobey has indicated a willingness to consider all or part of the requested grant as a loan, if necessary, in order to insure timely completion of the project. They will cover $26,970 of the project costs from water funds on hand and budgeted for 1984-1985. The estimated costs appear to be realistic and reasonable. The town can issue G.O. or Revenue Bonds, if necessary, to cover any indebtedness. As proposed, water user fees in Scobey will not need to be increased to finance the project.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with municipal utility construction projects. Positive effects will result from the increased fire fighting capacity created as a result of the project.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will primarily benefit the residents of Scobey. Replacing the inadequately sized transmission lines will improve the fire-fighting capability of the community which may aid in prevention of personal injury and property damage due to fires. The new lines will also improve the availability of the resource by allowing Scobey to utilize the production capacity of its well field.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $5,000 and a loan of $3,990. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Greenfields Irrigation District

PROJECT/ACTIVITY NAME: Hydropower Feasibility Study

AMOUNT REQUESTED: $28,000 Grant

TOTAL PROJECT COST: $56,000

AMOUNT RECOMMENDED: $28,000 Grant

PROJECT DESCRIPTION:

The Greenfields Irrigation District serves 600 farms on 83,000 irrigated acres. Preliminary reviews show that hydropower generating facilities could be installed on seven major structures in the irrigation system. A study is needed to determine if it is technically, financially and environmentally feasible to develop any or all of these sites. The study will be detailed enough to apply to FERC for a license if results are positive.

TECHNICAL FEASIBILITY ASSESSMENT:

The study is feasible as there is water, there is "head" and there is a delivery point for the product. Water is currently available only five months a year, and though water may be available to run through the canal system for a longer period, there is no place to return the water to the streambed. A year round flow of water in the ditch would also cause greater seepage and salination of soils, thus requiring protective measures and more studies. These facts will be pertinent to the study.

FINANCIAL FEASIBILITY ASSESSMENT:

The district has received estimates from consulting engineering firms for a average cost of $50,000. With contingencies and administrative costs added, the total reaches $56,000. Greenfields Irrigation District has budgeted its share ($28,000) of the cost for 1985. Should hydropower be developed, all profits would return to the district to offset future irrigation costs.

ENVIRONMENTAL IMPACT ASSESSMENT:

There are no impacts either positive or negative created by this study.

SUMMARY OF PUBLIC BENEFITS:

The study will directly benefit the 600 users within Greenfields Irrigation District. If the study has positive results and hydropower units are developed, major economic benefits would occur to the 600 users and indirect economic benefits would accrue to a community of 2,000 people.

RECOMMENDATION:

Hydropower development is a definite possibility on some of the sites subject of this study. Other entities have proposed development but none have made extensive studies or followed through. The Greenfields Irrigation District will pay 50% of the study cost; therefore, DNRC recommends a grant of 50% of the cost not to exceed $28,000 and will require the applicant to acquire at least two bids for the study.

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APPLICANT NAME: Town of Kevin

PROJECT/ACTIVITY NAME: Water Storage Reservoir Repair

AMOUNT REQUESTED: $50,000 Grant; $150,000 Loan

TOTAL PROJECT COST: $200,000

AMOUNT RECOMMENDED: $25,000 Grant, $175,000 Loan

PROJECT DESCRIPTION:

Kevin presently has a population of about 210. The town's existing water system consists of two springs, eight wells, an 840,000-gallon storage tank, booster pump station, and several thousand feet of distribution lines. Although the entire water system is generally quite old and several portions of the system need to be upgraded, Kevin's priority water system problem is its present water storage tank. About four years ago, the roof of the tank failed, probably because a vacuum was created within the tank. The roof and the upper part of the tank are in danger of collapse if repairs are not made soon. Also, a vertical weld in the top ring of the tank has recently begun to bulge and tank operating water levels have had to be lowered to avoid further damage. The tank needs to be repaired as soon as possible to prevent collapse of the roof and loss of the storage facilities.

The proposed project consists of design and construction of a new roof and structural support system, repair of the failing vertical weld section, repair of the overflow pipe, and cleaning and repainting of the interior and exterior of the tank.

TECHNICAL FEASIBILITY ASSESSMENT:

No engineering has yet been completed on the project. The cost estimate is a preliminary budget amount. During the design phase, alternative methods of repairing the roof and the estimated costs of such repairs will be compared to the estimated costs of construction of a new storage reservoir. The most cost-effective alternative(s) will be chosen. The proposed project appears to be appropriate and technically feasible, and should solve the problems with Kevin's water storage facilities. A competent consulting engineering firm will be selected to conduct the design of improvements and consider alternatives.

FINANCIAL FEASIBILITY ASSESSMENT:

A total cost of the project is estimated at $200,000 of which $170,000 are costs of construction and contingencies, and the balance is engineering and administration. The application is for a grant of $50,000 and a loan of $150,000. The estimated project costs appear to be realistic and reasonable, and the most cost-effective alternative will be chosen.

The only source of funding of this project is the DNRC water development program loan and grant funds. Kevin will have to bond for repayment of the loan portion of the funding package and water rates will be increased to meet the indebtedness. The town can issue G.O., Revenue or SID bonds.

ENVIRONMENTAL IMPACT ASSESSMENT:

Due to the confined area within which construction activities will take place and the type of construction involved, no adverse environmental impacts are anticipated from this project.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit the residents of Kevin. The major benefits will be preservation of the integrity of the present water storage facilities. Adequate water storage is needed for adequate fire protection. The upgraded storage tank will also serve to reduce maintenance costs of Kevin's wells, because of the reduced number of start/stop cycles required.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $25,000 and a loan of $175,000 contingent upon Kevin passing the necessary bond issue. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Town of West Yellowstone

PROJECT/ACTIVITY NAME: Storm Sewer/Water System Study

AMOUNT REQUESTED: $32,000 Grant

TOTAL PROJECT COST: $50,000

AMOUNT RECOMMENDED: $21,000 Grant

PROJECT DESCRIPTION:

West Yellowstone has a resident population of about 700, and a summer short-term population of 7,000 to 8,000 people who typically are visiting nearby Yellowstone National Park. The town's streets are in a badly deteriorated condition and in need of major repair and replacement. Lack of proper storm drainage is considered to be the major cause of the street deterioration problem. West Yellowstone is pursuing financing of the street replacement project at the present time. However, local officials realize that they may need to complete a considerable amount of construction under the street before starting the actual street

reconstruction project. This work includes a storm drain system of some type and possibly a central water system. The town has a central sewer system but no central water system. All residents use their own individual wells.

To insure that questions regarding underground construction are answered before starting reconstruction of the streets, West Yellowstone proposes to undertake a study to (1) determine the most cost effective and technically feasible alternative method of solving the storm drainage problem and (2) consider the feasibility of constructing a complete central water system, utilizing an as yet unlocated low flouride water source. If a central water system is feasible and has a realistic chance for development in the near future, the timing of the street and water projects needs to be coordinated so that installation of all water lines to be buried in the streets would take place before construction on the streets. Storm drain construction would be an integral part of the street project.

TECHNICAL FEASIBILITY ASSESSMENT:

The logical first step toward solving West Yellowstone's street problems, and possibly its water problems, is to conduct a study that compares the technical and financial feasibility of alternative solutions. Area water problems and street problems have been studied in a piecemeal fashion over the years by several different consultants. This study should review pertinent previous studies and use information gathered by such previous studies to the maximum extent possible.

The study is appropriate and is certainly a worthwhile undertaking that should yield useful and needed information.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $50,000 of which $43,000 is for consultant and subcontracted services, $3,400 is inflation contingency, and the remainder is administrative costs. The applicant is providing $18,000 of the project cost from budgeted funds and is applying to DNRC for a grant of $32,000. The project cost appears to be realistic.

ENVIRONMENTAL IMPACT ASSESSMENT:

This study will have no environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

The study will benefit the residents of West Yellowstone by finding cost effective and technically feasible solutions to the street and water problems. The subsequent upgrading project will also benefit primarily the residents of West Yellowstone. However, because of the tremendous amount of tourist traffic in the town, literally thousands of nonresident tourists will benefit from the street improvements and, if it is completed, from the central water system.

The ultimate solving of West Yellowstone's storm drainage problem will result in the possible prevention of personal injury (by providing a permanent solution to the badly deteriorated and often dangerous streets). Solving the storm drainage problem and the subsequent upgrading of the streets will also improve land quality, prevent property damage and possibly provide new business opportunities.

If a central water system is found to be cost effective and feasible, ultimate installation of such system would aid in the prevention of disease and add domestic water supply.

RECOMMENDATION:

The DNRC recommends a grant of $21,000. Receipt of the grant shall be contingent upon West Yellowstone securing the other funding necessary to complete the project. Any reduction in scope of the study should result in a proportionately smaller grant and any such reduction must not materially affect the effectiveness of the study.

APPLICANT NAME: Private Partnership

PROJECT/ACTIVITY NAME: Small Hydropower Development

AMOUNT REQUESTED: $ 44,000 Grant and 116,000 Loan

TOTAL PROJECT COST: $176,000

AMOUNT RECOMMENDED: $ 22,000 Grant and $138,000 Loan

PROJECT DESCRIPTION:

This private entity partnership has acquired an appropriate water use permit to install a generating plant using waters from a small creek. They have applied to FERC for an exemption from licensing and have applied for a permit and easements from the Forest Service for the power house site and pipeline. The project will include the installation of an intake structure, 3,700 feet of penstock having 515 feet of head, thrust blocking where necessary, the installation of a 95 kw generator, the building of a power house and 1-1/2 miles of line to tie in with the Rural Electric Association, which will transfer to Montana Power Company lines.

TECHNICAL FEASIBILITY ASSESSMENT:

The water is available and sufficient head is generated to make a small hydropower plant feasible. The partners are both retired professionals; one an engineer, the other a planner for the Forest Service. All preliminary work has been done by the partners but a consulting engineer will be hired to design and supervise construction.

ECONOMIC FEASIBILITY ASSESSMENT:

The total projected cost of the project is $176,000. The 95 kw unit is expected to produce at 42% efficiency 350,400 kwh's resulting in a gross revenue of $22,075. Direct operating costs annually are expected to be $2,500 coupled with a loan payment of $12,305 ($116,000 @ 10% over 30 years); a positive cash flow of $7,270 would result. A loan of $160,000 in the same term yields payments of $16,972, or a positive cash flow of $2,602 annually.

Both partners are financially sound with very low debt. The partnership will have only the assets and liabilities of the hydropower project. They will contribute $16,000 to the project.

Security has been offered in the system together with permits, easements, etc. DNRC would also take an assignment of the power company contract. This security would be marginally adequate if a grant were given.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be negative impacts made on the environment during the construction phase of the project. Major steps will be taken to minimize the effects, and corrective measures will be taken to bring the disturbed areas back to their original condition through placement of rocks and revegetating the exposed surfaces. The creek is steep and has no fishery habitat. The discharge will flow onto and against solid rock, thus creating no long-term problems. From a positive standpoint, almost the entire stream will flow through the penstock most of the year, conserving water by stopping seepage and losses that reach 21% during part of the year in this area. The power house will be built from materials that will blend with the native landscape.

SUMMARY OF PUBLIC BENEFITS:

Public benefits are indirect; there will be conservation of water, multi-purpose use of water and a creation of a supplemental power source.

RECOMMENDATION:

DNRC recommends a grant of $22,000 and a loan of $138,000 for this project subject to all permits, licenses and an acceptable power company contract.

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APPLICANT NAME: Private Homeowners Association

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $ 6,887 Grant and 12,663 Loan

TOTAL PROJECT COST: $27,550

AMOUNT RECOMMENDED: $ 3,400 Grant and $16,000 Loan

PROJECT DESCRIPTION:

A subdivision located in northwest Montana has a community water system controlled and owned by a private homeowners association. There are 28 members in the association with capacity in the subdivision to increase to 40 members. The existing well is no longer adequate to supply all the water needs of the subdivision, particularly in regard to fire control, and heavy demands on the pump in the summer make it subject to failure at any time. The project includes drilling a new well at a depth of approximately 125 feet, installing a new pump, and installing pipe into the existing storage reservoir.

TECHNICAL FEASIBILITY ASSESSMENT:

The 28 families water lawns and gardens sparingly, hoping to maintain some reserve in case of fire; also with the pump running nearly 100 percent of the time, there is no margin for breakdown. An adequate supply of water is needed for the existing homes and to provide for expansion within the subdivision. The existing well is 150 feet deep and has a capacity of 60 gpm. The new well is proposed in the same general geographic area and is expected to tap the same aquifer.

FINANCIAL FEASIBILITY ASSESSMENT:

The association has $8,000 in cash on hand for its contribution to the project. It has assets of nearly $35,000 with no debt. Current assessments average $10.50 per month and the Association feels an increase to $18.00 per month would be acceptable and would not create hardships. Based on the loan request at 10 percent over ten years, the average monthly assessment increase would be $6.10; thus adequate repayment capacity is available.

The project costs were budgeted by averaging estimates given by local well drillers.

Security for the loan is offered in the owned real estate and water system valued at $22,228.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts to the environment. Benefits will be in the ability to protect the environment from fire in this area.

SUMMARY OF PUBLIC BENEFITS:

The major benefits will be to the 28 families who are living in the subdivision and will extend to the 12 additional familes who will occupy the area in the future. Minor benefits to the general public will be from the fire protection provided by this project.

RECOMMENDATIONS:

Realizing the need for the project but recognizing the limited public benefits, DNRC recommends a grant of $3,400 and a loan of $16,000 for this project.

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APPLICANT NAME: City of Helena

PROJECT/ACTIVITY NAME: Sewage Treatment Plant Effluent Pipeline

AMOUNT REQUESTED: $154,524 Grant

TOTAL PROJECT COST: $164,824

AMOUNT RECOMMENDED: $ 21,000 Grant, $133,525 Loan

PROJECT DESCRIPTION:

The sewage treatment plant serving Helena, population 24,000, presently discharges to an open ditch which drains to Prickly Pear Creek some 1.5 miles to the north and east of the city. The easement for the effluent ditch was acquired in the early 1900's. Over the years the ditch banks have eroded due to increased effluent flows, meandering and other reasons and in places the ditch has moved outside of the easement boundaries. Adjoining landowners have complained to the city for years about the encroachment. The real problem that exists is the movement of the ditch beyond the boundaries of the existing easements and the resultant loss of private agricultural land.

The proposed project consists of design and construction activities involved with enclosing 3,700 feet of the ditch, in the area experiencing the greatest problem, in a 21-inch reinforced concrete pipe. The eroded farmland in the area would be reclaimed and restored to a useful condition up to the boundaries of the easement.

TECHNICAL FEASIBILITY ASSESSMENT:

The project is certainly technically feasible and if constructed would solve the defined problem. However, it appears as though alternative solutions are also technically feasible and should be considered. In April of 1983, the Soil Conservation Service recommended several necessary improvements to the effluent ditch and alternative solutions to the meandering/erosion problem. All of these alternative solutions should be considered and the most cost effective, technically feasible alternative chosen.

FINANCIAL FEASIBILITY ASSESSMENT:

The estimated total cost of the project is $164,824 of which $136,134 is the cost of construction and contingencies and the balance is engineering and administration. The application is for a grant of $154,524. The balance of the project cost will be funded by budgeted city funds.

Helena officials have indicated that they would try to fund an additional portion of the project if the DNRC grant is for less than requested. No DNRC loan is desired. The estimated costs appear to be realistic and reasonable. However, it is possible that a more cost effective solution exists. A cost effective comparison of the several technically feasible alternative solutions should be made.

ENVIRONMENTAL IMPACT ASSESSMENT:

A short-term increase in turbidity levels of the ditch water, and ultimately of Prickly Pear Creek, is expected from the project, although measures would be taken to minimize the impact. Also, during the construction period a small amount of farmland would be temporarily taken out of production. The above impacts would be considered minor and offset by the positive impacts of the project. The project would reduce the sediment load in Prickly Pear Creek by eliminating ditch bank erosion, restore approximately 1.7 acres of farmland, and maintain the boundaries of the easement.

SUMMARY OF PUBLIC BENEFITS:

This project would directly benefit the city of Helena (and indirectly the residents) and the affected land owner. The major public benefits are improving land quality, providing erosion control and preventing property damage.

RECOMMENDATION:

The DNRC recommends a grant of $21,000 and a loan of $133,525 contingent upon Helena securing the remainder of project funding (in the event the DNRC loan is not used) and passing the necessary bond issue if the DNRC loan is used. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

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APPLICANT NAME: Sun Prairie Estates County Water District

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $60,500 Grant, $60,500 Loan

TOTAL PROJECT COST: $121,000

AMOUNT RECOMMENDED: $20,000 Grant, $101,000 Loan

PROJECT DESCRIPTION:

The Sun Prairie Estates County Water District is a public agency located in Cascade County. The district includes one major subdivision, Sun Prairie Estates Subdivision, developed in 1972. The district now serves 86 users out of a maximum of 100. The total system consists of two wells, two ground level storage tanks, booster pumps, chlorination and several miles of distribution lines.

Because of a lack of looping of the water lines and some inadequately sized lines, several areas served by dead end lines experience low water pressures and unacceptably low residual chlorine levels. The combined pumping capacity of the two wells is about 50 gpm, which isn't sufficient to meet peak flow demands. The present booster pumping station and chlorination facilities operate very inefficiently and without the proper controls and instrumentation needed for automatic operation. At present the facilities' operation is extremely labor intensive and wastes electrical energy. The present chlorination facilities are also inadequate and need to be replaced. Other system deficiencies include a lack of fire hydrants and deterioration of the roof on the 80,000-gallon storage reservoir.

The proposed project consists of design and construction of new water mains (to accomplish looping), installation of fire hydrants, a new well, a new pump, controls and other improvements in the booster pump station, new chlorination facilities and a new roof on the largest storage reservoir.

TECHNICAL FEASIBILITY ASSESSMENT:

Because of the nature of the problems in the Sun Prairie Estates County Water District, consideration of numerous alternatives for most of the problems is not appropriate. Dead end line problems can only be corrected by looping. Additional supply, in this area, can only be provided by an additional well or wells. The operational control problems with the existing booster pump station can only be solved by installing the instrumentation and controls necessary to automate the system and reduce manual operation time and power consumption. The chlorination improvements are needed to allow continuous chlorination and to control dosages. The deteriorated and leaking storage reservoir roof needs to be replaced and the apparent most cost effective alternative method of replacement appears to have been selected. At this stage only preliminary engineering has been completed on the project.

The design for all proposed improvements will have to be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. Conceptually the WQB agrees with the entire proposed project, as long as the water system can handle the fire flows. The proposed project is technically feasible and will probably produce the desired effects. However, additional system problems such as lack of standby power and inadequately sized transmission lines should have been addressed and alternative solutions to the district's problems should have been studied.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $121,000 of which $93,500 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a grant of $60,500 and a loan of $60,500. The district has indicated a willingness to accept a grant of less than requested and a proportionately larger loan, if necesary, to insure timely completion of the project. The estimated costs appear to be realistic and reasonable. Insufficient comparison of alternatives has been undertaker at this point and it is difficult to determine whether or not the most cost effective alternatives were chosen.

The only source of funding identified for this project is the DNRC water development program loan and grant funds. The district will bond for repayment of the loan portion of the funding package and water rates will be increased to meet the indebtedness. The district can issue Revenue Bonds, upon approval by the district's voters.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. Positive environmental impacts will result from the looping of lines (which will increase water pressure and quantity and enhance chlorination effectiveness). The remainder of the project will enhance the quality and quantity of the water supply utilized by some 86 users in the district.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will primarily benefit the users within the district. Looping of lines and installation of new chlorination facilities will result in improved disinfection effectiveness, thereby reducing the potential for disease. It will also improve drinking water quality and improve the availability of the water to users. Installing fire hydrants will enhance fire-fighting capabilities in the district which may aid in prevention of personal injury and property damage as a result of fire. The new well will add to and improve the domestic water supply. The other improvements, new booster pump, new instrumentation and controls and the storage tank roof will improve the availability of the water to users and protect the quality of the stored water.

RECOMMENDATION:

The DNRC recommends a grant of $20,000 and a loan of $101,000 contingent upon the district passing the necessary bond issue. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

APPLICANT NAME: Meagher County

PROJECT/ACTIVITY NAME: Golf Course Gravity Flow Sprinkler System

AMOUNT REQUESTED: $144,130 Grant

TOTAL PROJECT COST: $144,130

AMOUNT RECOMMENDED: $ 94,000 Grant

PROJECT DESCRIPTION:

This gravity pressurized sprinkler system is a part of the overall development of a nine-hole golf course in a community complex that is also designed for other recreational uses such as jogging, ice skating and cross country skiing. A public swimming pool is planned for later construction. The land has been purchased through donations by citizens of the community. Monies for greens and fairway construction have been applied for through a grant from the Department of Fish, Wildlife and Parks.

A point of diversion from the main canal will be 7,500 feet from the golf course and require 8-inch PVC pipe to furnish the system. Operational head will be 105 feet at the upper end of the golf course and will be sufficient to operate the system. All pipes will be underground, and the system sprinklers will be of the pop-up variety.

TECHNICAL FEASIBILITY ASSESSMENT:

The need exists in this community for recreational facilities and this project attempts to satisfy that need. Likewise, irrigation of the golf course is required, and this project would make efficient use of the water in a low maintenance system. There is sufficient head generated to yield in excess of 50 pounds pressure psi to the system; there is an adequate water right for the 48 acres of land to be irrigated and the soils are suitable for the project.

FINANCIAL FEASIBILITY ASSESSMENT:

Surveys, topographical maps, etc., have been made for preliminary planning and design. Only one cost estimate for the facility has been acquired which included relatively standard prices. Budget costs appear normal and administrative costs are low. The only other alternative is a pump pressured system that would have slightly lower installation charges; however, operational costs would make that system more costly in the long run. The project does not have repayment capacity.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be very minor negative impacts to the environment during the construction phase from disturbing the vegetative cover. Where necessary, the areas disturbed will be reseeded. The positive impacts are the control of water to stop ditch erosion, efficient use of the water and the beautification of the area which will act as a buffer between an old saw mill and residential areas.

SUMMARY OF PUBLIC BENEFITS:

The primary benefit will be to the county populace of 2,200 people. The course will be open to the public and thus will enhance the tourist trade in White Sulpher Springs. Resource conservation is a general public benefit that will be enhanced through efficient use of water and erosion control.

RECOMMENDATION:

Recognizing the need to upgrade the community of White Sulphur Springs and protect its natural resources the DNRC recommends a grant of $94,000 be offered for this project.

APPLICANT NAME: Cascade County

PROJECT/ACTIVITY NAME: Gibson Flats Hydrogeological Study

AMOUNT REQUESTED: $22,600

TOTAL PROJECT COST: $22,600

AMOUNT RECOMMENDED: No funding

PROJECT DESCRIPTION:

Gibson Flats is a 320-acre rural area located one mile southeast of Great Falls adjacent to Sand Coulee Creek. Residents of the area have experienced severe flooding problems in the past and currently have problems with high groundwater. The groundwater situation has resulted in basement flooding, saturated septic tank drainfields, and contamination of nearby domestic wells.

Cascade County has requested grant funds on behalf of the Gibson Flat residents to collect groundwater data, evaluate the information, and recommend solutions to the high water table problem. The study will identify probable contributors to the groundwater zone so that controls or preventative measures can be implemented.

The study area includes 73 families living in a Rural Improvement District area. The Gibson Flats R.I.D. is located in a low area within the 100-year floodplain. The R.I.D. was formed to construct a drainage ditch to reduce long-term ponding problems in the area. Residents now feel the open ditch has aggravaged their groundwater problem and added a health hazard.

TECHNICAL FEASIBILITY ASSESSMENT:

A 1973 Soil Conservation Service Flood Hazard Analysis report documented the location of Gibson Flats in the 100-year floodplain. The report predicts 100-year flood depths in excess of five feet for part of the study area. Photographs of the 1969 flood indicate much of the Gibson Flats area is located in a depression which retains a large body of water for several weeks following a flood. Such ponding contributes to surface flooding of residences and saturates the ground for some time.

A drainage ditch was constructed in 1977 to reduce the ponding problem. The ditch has a very flat gradient and may have adverse slopes in some locations. Since the ditch appears to be very inefficient in conveying water from the area, the installation may increase recharge rates. However, the natural depression of the area indicates that local runoff has historically been retained in the area and contributed to the water table before the ditch was constructed.

Other factors which may contribute to high groundwater relate to increased inflow to the area due to changes in land use. Recent development in southeast Great Falls is probably the major contributor to increased inflow due to urban runoff. Great Falls has hired an engineering firm to study the problem and recommend a method of decreasing runoff to pre-development levels. Other land use changes such as installation of septic systems and local irrigation also contribute to the water table.

In general, the Gibson Flats area is very susceptible to surface flood events from Sand Coulee Creek and to local drainage problems associated with the natural depression in which the community is located. Protection from both floods and high groundwater are required to prevent property damage. The predicted high flood elevations and natural drainage problems dictate a very difficult and costly solution. The SCS has proposed substantial flood protection measures for the Sand Coulee and Gibson Flats areas. Local support to pursue a Watershed Protection and Flood Prevention Project through the SCS did not materialize. Relocation of residences may be the best approach to avoid the threat and damage of these severe floodplain-related problems.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the study is estimated to be $22,600; the entire amount is requested as a grant. The request includes $1,200 for administration, $7,900 for professional/technical costs, $12,300 for equipment, etc., and $1,200 for contingencies.

Local residents have expended a limited amount of money to acquire legal and engineering services to initiate investigations.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study results may allow residents to somewhat reduce their high groundwater problem. Such reductions will probably lower but not eliminate health hazards associated with contaminated wells. Flood events would remain a threat to life and property. Social aspects of the area would be improved if standing water and mosquito problems are eliminated.

The impact of any structural improvements is unknown at this time.

SUMMARY OF PUBLIC BENEFITS:

The proposed study activity will primarily benefit the Gibson Flats residents. The effort will help reduce health hazards associated with high groundwater. Property damage to basements may be reduced. Social aspects of the area will be enhanced with reduction of standing water.

Property damage and personal injury may still result from flood events.

RECOMMENDATION:

The Gibson Flats area experiences both groundwater and surface water property damage because of its low elevation in the floodplain of Sand Coulee Creek. The proposed study is aimed primarily at groundwater problems. DNRC recommends no funding for the proposed groundwater study because it will not result in a solution to both surface and groundwater problems. A solution which will economically protect the area from serious flooding is needed.

The Soil Conservation Service has investigated the area's water problems and prepared a preliminary flood protection plan which could be pursued under the SCS Watershed Protection and Flood Prevention Program. It is suggested that the Gibson Flats residents work with the SCS to investigate their opportunities for flood protection.

One suspected contributor to the area's groundwater problem is increased runoff from southeast Great Falls. Great Falls is now studying this problem and plans to reduce this runoff to pre-development levels. This effort could eliminate a major source of increased groundwater recharge.

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APPLICANT NAME: City of Helena

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $102,310 Grant

TOTAL PROJECT COST: $102,310

AMOUNT RECOMMENDED: $17,000 Grant, $85,310 Loan

PROJECT DESCRIPTION:

Helena presently has a population of 24,000. Approximately 20% of the city's water storage capacity is provided by Woolston Reservoir, a 2.0-million gallon reservoir located just above the west end of Clarke Street. The reservoir was constructed in 1888 and the current roof installed at an unknown date following construction. The present roof is badly deteriorated and the several openings that have developed provide an opportunity for contamination of the reservoir's treated water from several sources, including animals. A

new roof is needed to safeguard the water in this reservoir and eliminate the present potential health hazard that exists.

The proposed project consists of design and construction of a new standing seam, pre-finished metal roof over the existing reservoir roof. The present roof supporting structure has been studied and found to be in good condition and will not be replaced.

TECHNICAL FEASIBILITY ASSESSMENT:

Helena hired a structural engineer to inspect the reservoir roof and supporting structure and conduct an evaluation of the roof system. In addition, the structural engineer proposed several alternative replacement roofs. An architectural firm also evaluated the roof system and proposed alternative replacement roofs, complete with estimated costs. The chosen alternative is a standing seam, pre-finished metal roof to be placed over the existing roof and supporting structure. This type of roof should require minimal maintenance and should remain serviceable for many years. The selected alternative will solve the problems with the existing roof system and the estimated costs appear to be reasonable.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $102,310 of which $96,810 are costs of construction and contingencies and the balance is engineering and administration. The application is for a grant of $102,310. City officials have indicated that they would try to fund part of the project if the DNRC grant is for less than 100% of the project costs. The estimated costs appear to be realistic and a cost effective solution to the problem.

ENVIRONMENTAL IMPACT ASSESSMENT:

This project is confined to the area of the existing storage tank. It involves only work on the tank and no adverse environmental impacts are anticipated, not even those usually associated with municipal utility construction projects.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Helena. The major benefits will be prevention of disease (by eliminating the potential for contamination) and improving domestic water supply.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a grant of $17,000 and a loan of $85,310, contingent upon Helena securing the remaining project funding from other sources or passing the necessary bond issue for the loan repayment. Any reduction in scope should result in a proportionately smaller grant and any reduction in scope should not affect priority improvements.

Water Development Program
Private Loans Only
Project Summaries

APPLICANT NAME: Private Applicant - Individual

PROJECT/ACTIVITY: Hydropower Development

AMOUNT REQUESTED: $200,000 loan

PROJECT COST: $366,000

AMOUNT RECOMMENDED: $200,000 loan

PROJECT DESCRIPTION:

The system for developing a hydropower project will include a 187 kilowatt Francis type turbine, penstock, powerhouse and access lines to Montana Power Company lines. The source of water is a small southwestern Montana stream.

TECHNICAL FEASIBILITY ASSESSMENT:

A Francis type turbine will be used in this project as it has relatively high efficiency under low head conditions. Gross head is figured at 115 feet, and length of flow through the penstock will be 2,400 feet from the creek source to the powerhouse. A penstock diameter of 22 inches or greater will be used so that operational efficiency is greater than 85 percent under maximum flow. Stream flow varies greatly; studies of minimum streamflow requirements to maintain fish habitat, system design and efficiency will be done on this project by Montana State University, Department of Fish, Wildlife and Parks, and Department of Natural Resources and Conservation.

System design and construction supervision is being done by a professional engineer.

Permits required for this project are either in hand or currently being processed.

FINANCIAL FEASIBILITY ASSESSMENT:

The power from this project will be sold to the Montana Power Company under a partially levelized contract over a 35-year period. This type of contract will provide for an approximate $45,000 return the first year, and increase annually, becoming adequate to service debt the fourth year.

The project is financially feasible and has a life expectancy in excess of 50 years.

Additional costs over and above the loan funds requested will be provided by the applicant or through services provided by the applicant.

SECURITY:

The entire system, including the assignment of easements, interest in the sites for the powerhouse and diversion, and the assignment of the power company contract, is offered for security.

ENVIRONMENTAL IMPACT ASSESSMENT:

There are no known adverse environmental impacts associated with this project. Studies being made of this project may determine needs and solutions for other small hydropower development projects in Montana. Newly exposed earth from trenching will be seeded to vegetative cover where necessary to control weeds and erosion.

RECOMMENDATION:

The proposed project is both technically and financially feasible; it affords the Department of Natural Resources and Conservation, Montana State University, and Department of Fish, Wildlife and Parks opportunity to study procedures, design, water requirements, and environmental impacts and requirements of hydropower units in small streams. DNRC recommends a loan of $200,000.

APPLICANT NAME: Private Applicant - Individual

PROJECT/ACTIVITY: Gravity Irrigation Project

AMOUNT REQUESTED: $195,000

PROJECT COST: $195,000

AMOUNT RECOMMENDED: $195,000 Loan

PROJECT DESCRIPTION:

The project is broken down into three separate units:

1) The installation of approximately 5,300 feet of 10-inch PVC pipe from a dam to a new center pivot that will gravity-irrigate 170 acres. Approximate cost—$85,000.

2) The installation of a pump in a small creek and a movable center pivot to cover 96 acres. Approximate cost--$65,000.

3) The installation of approximately 4,650 feet of 10-inch PVC pipe from an existing reservoir to a new center pivot that will gravity-irrigate 105 acres. Approximate cost—$45,000.

TECHNICAL FEASIBILITY ASSESSMENT:

All projects are technically feasible from the standpoint that soils are of adequate quality for irrigation; water is available; appropriate filings have been made for that water; the systems have been designed by a reputable irrigation firm to deliver adequate water in a timely manner under specified heads; and these conditions have been reviewed by DNRC.

FINANCIAL FEASIBILITY ASSESSMENT:

The completed project will irrigate 371 acres. Increased production of hay will be three tons per acre. At a price of $55 per ton and cost of production at $25 per ton, net revenue will be $33,390. A positive cash flow will be generated.

The applicant has offered 960 acres for security. These acres are subject to a Federal Land Bank mortgage and valued at $280,000. The 170-acre pivot is located on this land. The security is adequate, with DNRC in a second position to the Federal Land Bank.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction will involve a considerable amount of trenching; however, the effect on the environment will be negligible. Benefits will occur from more efficient use of soil and water.

RECOMMENDATION:

The projects are all technically and financially feasible. They provide added hay production to a family farm that has a definite need. DNRC recommends a loan of $195,000.

APPLICANT NAME: Private Applicant - Individual

PROJECT/ACTIVITY: Conversion From Pump to Gravity Irrigation

AMOUNT REQUESTED: $26,600

PROJECT COST: $26,600

AMOUNT RECOMMENDED: $26,600

PROJECT DESCRIPTION:

This project is for the conversion from pump to gravity pressure irrigation on 100 acres that are served by wheel lines. An intake structure will be constructed, and 3,600 feet of 15-inch mainline buried to deliver the water under a static head of 94 feet. This system will replace a delivery ditch and a 75 hp electrical pump. The system is a beginning phase for the placement of underground mainlines to an additional 205 acres. Replacing ditch with pipe will control some seepage and buildup of wet areas.

TECHNICAL FEASIBILITY ASSESSMENT:

The project has been designed by the project manager of a major irrigation project, who will supervise construction. The project is a part of a gravity irrigation plan for the project area. Sufficient head and sufficient water are available to make the system function properly. The point of diversion is designed to be compatible with the long-range plan of the irrigation project.

FINANCIAL FEASIBILITY ASSESSMENT:

The project does not greatly benefit increased production, but savings in utility costs at today's rates are $3,500 per year. Based on the loan request, the savings made will be adequate to service debt. Cost per acre to develop is $266, which is acceptable.

The applicant has offered a mortgage on 600 acres of his property. The security position will be in a second position to a first mortgage with an adequate margin for the loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

Some minor negative impacts will occur during the trenching to lay pipe; however, the disturbed earth will be reseeded as necessary. Benefits will be the efficient use of water, control of seepage on the farm, and energy conservation.

RECOMMENDATION:

This proposed project will economically benefit a family farm and create beneficial use of soil and water resources. DNRC recommends a loan of $26,600.

APPLICANT: Private Applicant—Partnership

PROJECT/ACTIVITY: Irrigation System Development and Dam Construction

AMOUNT REQUESTED: $200,000

TOTAL PROJECT COST: $990,000

AMOUNT RECOMMENDED: $200,000 Loan

PROJECT DESCRIPTION:

The overall project consists of the construction of an earth-filled dam using approximately 320,000 cubic yards of dirt. The dam will provide storage for approximately 5,000 acre-feet of water. From the reservoir, water will be delivered to approximately 2,000 acres for irrigation through seven center pivots and some small areas of flood irrigation. Delivery of the water is through a canal system, using the existing streambed and through the use of lift pumps. The portion of the project considered by DNRC for funding is irrigation equipment.

TECHNICAL FEASIBILITY ASSESSMENT:

The entire system was designed by a professional engineer (P.E.) with construction to be monitored and approved by him. The irrigation equipment specifications were determined by the P.E. and the equipment purchased will meet or exceed those specifications.

FINANCIAL FEASIBILITY ASSESSMENT:

The project has development costs of $450 per acre, which is high; however, a three-year projection indicates a positive cash flow sufficient to pay development costs and funding sources. There will also be a cash excess for long-term debt retirement.

Security in real estate has been offered by the partners of this project adequate to meet security requirements. Prior to any funding, partial releases or subordination agreements may be required from prime lenders.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction will create barren areas for a period of time; however, top soil will be stockpiled, placed back on the excavated areas and seeded to compatible grasses. Benefits to the environment will occur from water storage, flood control and more efficient use of the soil and water resource.

RECOMMENDATION:

Recognizing the complex financial structure of the partnership and needs from other funding sources, this recommendation is made subject to the acquisition of other financing as approved by DNRC. DNRC recommends a loan of $200,000.

APPLICANT NAME: Private Applicant - Corporation

PROJECT/ACTIVITY: Irrigation Ditch Rehabilitation

AMOUNT REQUESTED: $38,000

TOTAL PROJECT COST: $38,000

AMOUNT RECOMMENDED: $38,000 - loan

PROJECT DESCRIPTION:

The original irrigation ditch serving the applicant was built in 1885, and was designed to carry 600 miners inches of water. The ditch was constructed along rock hillsides, and over a period of time, seepage became a problem. This plan calls for the rehabilitation of 5,460 feet of the ditch. Pipe will replace 1,160 feet of the ditch, and the remainder will be shaped, graded, and lined with bentonite. Included with this work will be a headgate structure, a wasteway and Parshall flume.

TECHNICAL FEASIBILITY ASSESSMENT:

Continued ditch use, and cleaning along the rock hillsides has increased the seepage from the ditch to the point that the ditch is only usable a portion of the summer, and then not at capacity. A farmstead is affected by the seepage and water loss means some irrigable lands are never irrigated and others only partially.

The Soil Conservation Service has studied the problem and designed the entire project to resolve the problem the most efficient way. The SCS will monitor and certify the construction.

The project is technically feasible and designed to completely upgrade the ditch.

FINANCIAL FEASIBILITY ASSESSMENT:

The $38,000 cost estimate was based on rates approved by the ASCS in the county for its Agricultural Conservation Program (ACP). The total $38,000 is requested from DNRC for project construction; however, approximately $16,900 will be paid back over a four-year period with ACP cost-share funds. Actual financial benefit in the short term is adequate to service the debt even without the ACP cost share; production increase alone will net the owner $3,750 per annum and maintenance cost to the ditch will decrease markedly. The project is economically feasible.

The applicant has offered 640 acres, valued at $128,000, which is subject to an insurance company mortgage of $30.50 per acre. Security is adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Negative impacts will be created during construction by disturbing the soil and creating turbidity in the creek. These impacts will be of short duration. Positive impacts will be created through the control of seepage and more effective and efficient use of water.

RECOMMENDATION:

This proposed project will economically benefit a family farm and create a beneficial use of soil and water resources. DNRC recommends a loan of $38,000.

APPLICANT NAME: Private Applicant-Nonprofit Ditch Company Corporation

PROJECT DESCRIPTION: Irrigation Canal Drop Structure Rehabilitation

AMOUNT REQUESTED: $80,000

TOTAL PROJECT COST: $80,000

AMOUNT RECOMMENDED: $80,000 loan

PROJECT DESCRIPTION:

A large drop structure in a main irrigation canal has been in use for over 50 years, and is badly deteriorated from under-cutting and concrete degradation. The structure was originally over-designed in size, and the new construction will actually be inside the old structure.

TECHNICAL FEASIBILITY ASSESSMENT:

The engineering work was completed by a professional engineer. Rehabilitation of the structure includes building the new drop inside the old framework--a procedure that was sucessfully completed on a similar drop 15 years ago, and which shows no sign of deteriorating. To resolve the undercutting problem the new structure will include a larger stilling basin, new cut-off walls and riprap on the down stream end. Sloped aprons and a front cut-off wall will adequately protect the entrance from undercutting and seepage.

FINANCIAL FEASIBILITY ASSESSMENT:

The irrigated lands served by the ditch are high intensity farms producing sugar beets, beans, small grains, corn and hay. There are approximately 15,000 acres serviced by the ditch below the drop structure. To point out the overall loss in the event the structure would fail during the growing season is impossible. However, an easy example is to figure one-third of the area is hay (5000 acres), and that loss of one ton per acre at a value of $50/ton would result in a gross loss of $250,000. Untimely irrigation or loss of irrigation on sugar beets, beans, corn and small grains would result in greater value losses per acre. Rehabilitation using the existing structure will cost significantly less than complete replacement and removal of the old structure.

The ditch company is financially sound and has an excellent history of collecting assessments on water. The company has 5,602 shares outstanding, and currently it assesses at $6.00 per share. The ditch company has turn-off authority against any delinquent shareholder.

Loan repayment will be approximately $9,000 per annum, which is $1.60 per share. This will not create a hardship on the shareholders.

Assessments have remained fairly stable and a reserve account is maintained for emergency repairs and maintenance.

Security for the loan will be acquired through a real estate mortgage, a mortgage of the water right, an assignment of securities, and the gaining of water turn-off authority. This will meet or exceed the DNRC requirement of security in the amount of 125% of the loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no adverse environmental impacts created through the implementation of this project.

RECOMMENDATION:

The proposed project will protect a large number of family farms from potential monetary loss through this preventive maintenance. DNRC recommends a loan of $80,000.

CHAPTER II

The Water Development Program - Loans Greater than $200,000

A. Program Description and History

In 1981, the legislature adopted S.B. 409 which provided for the issuance of up to $250 million in Montana coal severance tax bonds "for financing specific water resource development projects and activities in the state authorized by the legislature." The interest rate on loans to public entities made from coal severance tax bond proceeds is established by the legislature, and coal severance tax revenues can be used to reduce the interest rate on these loans below the rate at which the state bond was sold. Therefore coal severance tax bonds are payable from revenues of the water development projects financed by the bond proceeds and from coal severance tax proceeds. To implement these repayment provisions, the statute established a fund structure within the permanent coal tax trust fund. A coal severance tax bond fund was established to which coal tax revenues are credited when collected and from which transfers are made to the coal severance tax permanent trust fund semiannually except for the amount necessary to meet the coal severance tax bond principal and the interest payable on the next semiannual payment date. The project revenues and monies in the coal severance tax bond fund secure these bonds.

The 1983 Legislature implemented the coal severance tax loan program by adopting H.B. 885. The bill approved specific water development projects as "implementing the state's policy of full use, conservation, and protection of its water resources" and provided that coal severance tax bonds be issued to finance these projects. Twenty-two local public projects were authorized for a total of $17 million at interest rates ranging from three percent to seven percent for the first five years of the bond term and at the bond rate for the remaining years. In addition, the legislation authorized the sale of $45.35 million in bonds for the installment of hydropower facilities in state-owned dams and $555,000 for the rehabilitation of state-owned projects. The bonds for state projects were to be repaid by users at the interest rate received on the bonds.

B. Program Administration and Project Review Procedures

H.B. 885 provided that loans from coal severance tax bond proceeds be administered by the Department of Natural Resources and Conservation, and that projects be reviewed to determine their technical and financial feasibility. The Department has been working since 1983 with project sponsors authorized to receive loans from coal severance tax proceeds to assure project feasibility and prepare for local bond purchase transactions. In February 1984, the Montana Supreme Court case, Grossman vs. State of Montana, which was brought to test the constitutionality of the bonding authority was resolved in the state's favor and preparations began for the first Montana Coal Severance Tax Bond. A $10,485,000 issue was sold in August 1984. The 20-year bond was sold for 10.26 percent. The proceeds will be used for fifteen loans to local public entities scheduled for closing through the spring of 1985. One conservation district, two irrigation districts, four county water and sewer districts, and eight municipalities will receive these proceeds. The loan mechanism is the purchase by the Department of a local revenue bond. The projects are listed in Chapter V of this report. The Department has contracted with bond

attorneys for the preparation of standard bond purchase documents and has been developing closing requirements and procedures for the loan program. In addition, the state-owned Martinsdale dam will be rehabilitated with $250,000 in bond proceeds.

Loan applications for the next coal severance tax bond issue were submitted during the water development application period in the spring of 1984. Water development application forms were used and applications were reviewed for technical and financial feasibility. Feasible projects were recommended for loan approval to the Water Development Advisory Council. The Council's recommendation is submitted to the governor, who will make his recommendation to the legislature.

C. Project Funding Recommendation Procedure

The coal severance tax bond authority includes the authority to offer loans below the rate at which the state bond is sold. The 1983 Legislature requested that the Department recommend a methodology for giving differential interest rates to projects recommended for loans. Several alternatives were developed which considered a balance between project need and the amount of coal severance tax which would be required to subsidize a reduced interest rate. The Water Development Advisory Council considered the alternatives and recommended to the governor four different interest levels for approved loans: interest rate reductions of four, three, and two percent below the state bond rate for seven years of an anticipated 20-year term and the state bond rate for the remaining 13 years, and one option of the state bond rate for the full 20-year term. Reduced interest rates were recommended according to the need of the project. This need was measured by calculating the cost per user or per acre should the project sponsor have to pay the full state bond rate which was estimated at ten percent. If the resultant rate was more than 200 percent above the average rate statewide for a particular type of project, then the largest reduction in interest rate which was to be offered was recommended. This is a four-point reduction for seven years. If the resultant user rate was 100-200 percent above the state average then a three point reduction for the first seven years was offered. Further, if the resultant user rate was 0 to 100 percent above the state average, a two-point reduction for seven years was recommended. Even with these reductions, most of these project sponsors will be paying rates significantly above the state average. It was felt that to reduce their interest rates to where they are paying the state average would have placed too heavy a burden on the coal tax.

State-owned projects and projects which would produce revenues beyond the amount needed to repay the loan were recommended for loans at the state bond rate.

D. FY 1986-1987 Loan Projects

The Department considered 27 projects for coal severance tax loans--a total request of $48,831,188. Four projects were for irrigation system improvements, one was a hydropower project, and the remaining were municipal and rural water or sewer projects. Eight projects are recommended for the highest point reduction, seven for the three-point reduction, and 12 for the two-point interest reduction. Table 3 details the coal severance tax loan recommendations. Project summaries follow the table.

TABLE 3
COAL SEVERANCE TAX LOAN PROGRAM
WATER PROJECTS
LOAN AMOUNTS AND INTEREST RECOMMENDATIONS

The following loan applications are arranged alphabetically in 4 groups. Each group is recommended for a different interest arrangement. Group A projects are recommended for the greatest level of subsidy and Group D projects will repay the loan at the state bond rate. The three levels of subsidy are based on the percentage above the state average utility rate or assessment per irrigated acre which would be needed to repay the requested loan. Group A projects would require rates or assessments of 200% or more above the state average to repay the loan, Group B would require rates or assessments from 100% to 200% above the state average and Group C would require up to 100% above the state average.

GROUP A The following loans are recommended for an interest rate of 4 percentage points below the rate at which the state bond is sold for the first 7 years of an anticipated 20 year term, and the rate at which the state bond is sold for the remaining 13 years.

Applicant/Project	Recommended Loan Amount
Yellowstone County/Oxbow Area Water Supply	$ 1,100,000
Town of Drummond/Fire and Water Project	$ 304,600
Town of Dutton/Water Supply Construction	$ 652,000
East Bench Irrigation District/ McHesson Dry Gulch Gravity Irrigation System	$ 1,317,295
Evergreen Water and Sewer District/Flathead County Sewer System	$ 3,226,900
Town of Neihart/Water System Improvement	$ 550,000
City of Glasgow/Water Supply Source	$ 5,662,000
Yellowstone County/Cedar Park Water System	$ 555,000
TOTAL	$13,367,795

GROUP B The following loans are recommended for an interest rate of 3 percentage points below the rate at which the state bond is sold for the first 7 years of an anticipated 20 year term, and the rate at which the state bond is sold for the remaining 13 years.

Applicant/Project	Recommended Loan Amount
Cooke Passe-Cooke City-Silver Gate County Water-Sewer District/Sewer Improvements	$ 336,730
City of Fort Benton/Water System Improvement	$ 753,060
Lakeside County Sewer District/Wastewater Treatment Facility	$ 800,000
Town of Lima/Water Facilities Update	$ 376,500
Town of Poplar/Water System Improvement	$ 477,260
Roosevelt County Rural Water District/Rural Water System	$ 2,219,124
Worden/Ballentine Yellowstone County Water and Sewer District/Reservoir Construction	$ 500,000
TOTAL	$ 5,462,674

GROUP C The following loans are recommended for an interest rate of 2 percentage points below the rate at which the state bond is sold for the first 7 years of an anticipated 20 year term, and the rate at which the state bond is sold for the remaining 13 years.

Applicant/Project	Recommended Loan Amount
City of Bozeman/Lyman Creek Water System Improvements	$ 726,079
Charlo Water Users Association/Distribution System Replacement	$ 269,440
City of East Helena/Water System Improvement	$ 434,434
Town of Ekalaka/Water system Renovation	$ 395,250
City of Havre/Water System Improvement	$ 2,590,000
Hill County Water District/Rural Water Supply	$ 1,410,000
Lockwood Irrigation District/System Renovation	$ 247,000
Pondera County Conservation District/Lower Birch Creek Watershed	$ 750,000
Seeley Lake Water District/Water Storage Tank	$ 310,706
Tiber County Water District/Water System Improvement Monitoring System	$ 559,260
Whitehall/Sewer Project	$ 300,400
White Sulphur Springs/Water System Improvements	$ 639,150
TOTAL	$ 8,631,719

GROUP D The following projects are recommended for loans at the interest rate at which the state bond is sold. Middle Creek is a state project and the Tiber Dam project is revenue producing and therefore not recommended for a subsidy.

Applicant/Project	Recommended Loan Amount
Montana Department of Natural Resources and Conservation/ Middle Creek Dam Rehabilitation	$ 3,500,000
Milk River Irrigation District/Tiber Dam Power Project	$17,869,000
TOTAL	$21,369,000
GRAND TOTAL	$48,831,188

Water Development Program
Loans Greater than $200,000
Project Summaries

Group A

APPLICANT NAME: Yellowstone County

PROJECT/ACTIVITY NAME: Homestead-Oxbow Area Water System

AMOUNT REQUESTED: $1,100,000 Loan

TOTAL PROJECT COST: $1,100,000

AMOUNT RECOMMENDED: $1,100,000 Loan

PROJECT DESCRIPTION:

The Homestead-Oxbow Area is actually comprised of several subdivisions that have developed over the years immediately to the northeast of Billings Heights. Originally, home owners in the area were able to develop their own wells and many domestic wells produced as much as 50 gallons per minute (gpm). However, as the area developed and more wells were drilled into the aquifer, the yields in many area wells dropped to as low as 2 gpm. Faced with inadequate water supplies, many residents have resorted to hauling water to individual cisterns. Fire protection is essentially nonexistent in the area. The Homestead-Oxbow Area has for years wanted to be provided water by the Billings Heights Water District. However, only since completion of its 2-million-gallon Lanier Reservoir in 1981 near the Homestead Subdivision has the district had the facilities necessary to extend service in the area. The district has agreed (subject to approval of the voters) to provide water service to the Homestead-Oxbow Area provided the area form an RSID, pay for its own improvements and "buy in" to the district. The "buy in" fee will cover the district's cost of providing a booster pump station and 24-inch, 16-inch and 12-inch transmission lines in the area. Yellowstone County has made application to DNRC for the residents of the Homestead-Oxbow Area and are in the process of forming an RSID.

The project consists of design and construction of the following improvements within the future RSID: 6,865 feet of 8-inch line, 3,325 feet of 6-inch line, twelve 8-inch gate valves, five 6-inch gate valves, 28 fire hydrants and miscellaneous appurtenances. The project also includes the cost of forming an RSID and "buy in" to the district. The "buy in" costs cover the district's design and construction of 1,050 feet of 24-inch line, 1,780 feet of 16-inch line, 5,083 feet of 12-inch line, two 12-inch butterfly valves, three 16-inch butterfly valves, eight 12-inch gate valves, booster pump station and miscellaneous appurtenances.

TECHNICAL FEASIBILITY ASSESSMENT:

A preliminary engineering study of the project was conducted. The study addressed alternatives, special problems, costs, financing options and other issues in detail. The proposed alternative for solving the Homestead-Oxbow Area's domestic water problems appears to be appropriate and technically feasible. It also appears to be a cost effective solution that will produce the desired effects. The design will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $1,100,000. Of this total estimated project cost, approximately $930,341 is the cost of construction, "buy in" and contingencies, and the balance is for engineering and administration. As discussed earlier, the "buy in" costs are to cover capital improvements by the district. The application is for a loan of $1,100,000. This amount of loan request places the applicant into the category that will utilize coal severance tax bond proceeds. The project is quite costly

and based on the estimated 94 acres in the Homestead-Oxbow Area, the average (0.60 acre) lot owner will pay $7,021 for the central water system plus the monthly user fee charged by the district. In spite of the high costs, the area residents reportedly overwhelmingly support the project. The RSID to be created will issue S.I.D. bonds in order to repay the DNRC loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

Other than those short-term impacts typically associated with municipal construction projects, no adverse impacts are anticipated with this project. No stream crossings are required. The positive impacts associated with supplying the area with adequate water for domestic and fire protection purposes are significant.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit the residents of the Homestead-Oxbow Area of Billings Heights. The primary benefits of the new water system are improved fire protection and the addition of domestic water supply. The new water system will certainly add to the area land value, if not its quality.

RECOMMENDATION:

The DNRC recommends a loan of $1,100,000 at an interest rate 4 percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon formation of the RSID. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Drummond

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $304,600 grant

TOTAL PROJECT COST: $304,600

AMOUNT RECOMMENDED: $304,600 loan

PROJECT DESCRIPTION:

The town of Drummond has no central domestic water system. The approximately 400 residents use individual wells for domestic purposes. The town does operate and maintain the old railroad supply, storage and limited distribution system for fire protection in a major portion of the community. Apparently, residents are satisfied with their private wells for domestic purposes and would not support the expense of developing a central domestic water system. However, the Town Council and apparently the majority of residents do recognize a need for greater fire protection and support development of a central water system to provide fire flows throughout the community.

The project consists of design and construction of a new fire protection water system consisting of the following improvements: development of two 100-200 gpm wells, 7,600 feet of 8-inch transmission and distribution line, 12 fire hydrants, nineteen 8-inch control (gate) valves, 250,000 gallon storage reservoir with access road, level controls and telemetering system.

TECHNICAL FEASIBILITY ASSESSMENT:

A preliminary engineering evaluation addressed storage and project scope alternatives, costs and other issues. The project as proposed is technically feasible and upon completion would provide Drummond with adequate fire protection. Given the cost of the project, however, the residents may find the project unaffordable. Expanding the project tn provide domestic water also would certainly increase the benefits of thc system to the residents but would also increase the project cost somewhat. The design of all improvements would need to be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project as proposed is estimated at $304,600. Of this estimated total project cost, approximately $286,550 is the cost of construction and contingencies and the balance is for engineering and administration. The application is for a grant for 100% of project costs. The amount of the grant request places the applicant into the category that will utilize coal severance tax bond proceeds. The project will be quite costly to the residents of Drummond. A post development water user fee of $15.00 per user per month, or possibly more, would have to imposed on the residents to pay for the improvements and to operate and maintain the system. Drummend would probably have to issue general obligation bonds in order to repay the loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

Other than those short-term impacts typically associated with municipal construction projects, no adverse impacts are anticipated with this project.

SUMMARY OF PUBLIC BENEFITS:

The project would benefit only the residents of Drummond. The primary public benefit would be improved fire protection, which may prevent death or personal injury and property damage related to fires.

RECOMMENDATION:

The project as proposed will be quite expensive for the residents with one resultant benefit, improved fire protection. However, expanding the project to include domestic water provision for the residents of Drummond, as well as fire protection could optimize use of the resource and constructed facilities in a cost-efficient manner. DNRC recommends a loan of $304,600 at an interest rate four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the town passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Dutton

PROJECT/ACTIVITY NAME: New Water Supply Construction

AMOUNT REQUESTED: $326,000 Grant and $326,00 Loan

TOTAL PROJECT COST: $652,000

AMOUNT RECOMMENDED: $652,000 Loan

PROJECT DESCRIPTION:

Dutton proposes to replace its present groundwater supply by connecting to the existing Tiber County Water District system (Tiber System). The town's water is currently supplied by a well and pump facility located 105 feet from the Teton River bank. Dutton is concerned that progressive erosion of the embankment may destroy their water supply, leaving the residents without water. The water is also high in iron, manganese and sulfates which results in treatment expense and inconvenience to the town's residents.

Dutton has completed Phase I of a water supply study which indicated their present water source could be protected from erosion and treated to enhance the quality at a cost below that of developing a new supply. The community feels that erosion control and treatment are not long-term solutions to their water supply problem. In an effort to develop a new supply, test wells were drilled in an area determined to have the highest potential. The tests proved unsuccessful. Dutton now favors purchasing water from the existing Tiber rural water system.

The proposed project includes construction of 17 miles of 8-inch transmission line and installation of a new pump station and chlorination unit.

TECHNICAL FEASIBILITY ASSESSMENT:

Dutton's existing water source yields adequate quantities of water which meets primary safe drinking water standards. The pump station is in good condition and has excess capacity. Dutton's water supply study indicates the Teton River bank can be stabilized with riprap and the water quality can be enhanced at a cost below that of developing a new supply. These points indicate use of the existing water supply is a viable option.

There is some risk associated with continued use of the existing supply. A major flood event could destroy the well and pumphouse after riprap is installed. Treatment of the water to remove all undesirable contents such as sulfates is probably not cost effective. Also, the community has indicated there is a problem with obtaining additional right-of-way to improve their water source.

In general, the town can continue to use their water supply with some risk and inconvenience. Improvement of the present supply will decrease the risk and inconvenience, but will not eliminate the potential loss of the source to a major flood. Connection to the Tiber system is a good option for a new supply. However, it will result in high water rates to the town's residents.

Additional agreements with the Tiber group regarding capital improvement costs, operation, maintenance, replacement, expansion, etc., should be negotiated if the project is pursued.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated to be $652,000, which includes: $17,000 administration; $22,300 financing; $60,000 professional/technical; $462,000 construction; and $90,700 contingencies. Dutton's current monthly water rate is $13.75 per month (up to 2,000 gallons) and $1.25 for each additional 1,000 gallons.

ENVIRONMENTAL IMPACT ASSESSMENT:

Short-term impacts will include loss of vegetation and erosion along the 17-mile pipeline route. The pipeline crosses the Teton River and several minor water courses. Final impacts in these areas should be determined in the design and permitting phases.

SUMMARY OF PUBLIC BENEFITS:

The residents of Dutton and several rural water users located near the transmission line will receive benefits from this project. Primary benefits include improved domestic water supply and water quality.

RECOMMENDATION:

DNRC recommends a $652,000 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be four percentage points below the rate at which the state bond is sold for the first seven years, and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility user fees from the state average. Any reduction in project scope should not affect priority improvements.

Use of loan funds is contingent on negotiation of a complete long-term water purchase agreement with the Tiber County Water District.

APPLICANT NAME: East Bench Irrigation District

PROJECT/ACTIVITY NAME: McHessor-Dry Gulch Gravity Irrigation Project

AMOUNT REQUESTED: $ 329,324 Grant and $987,971 Loan

TOTAL PROJECT COST: $1,503,595

AMOUNT RECOMMENDED: $1,317,295 Loan

PROJECT DESCRIPTION:

Continued increased energy costs, periodic power outages and down time for pump repairs have prompted a group of ranchers to have a gravity irrigation system designed from the East Bench canal in Madison County. The proposed project will convert 346 acres of isolated native rangeland parcels to sprinkler irrigation and convert 2,300 acres of pump sprinkler to gravity flow irrigation. This will require approximately 6.9 miles of underground pipe with associated metered turn-outs, valves, junctions, etc.

TECHNICAL FEASIBILITY ASSESSMENT:

The project has been designed by the Soil Conservation Service and will be administered by them. The design is a basic system of delivery pipes sized to deliver adequate quantities of water to specified points under appropriate pressures to consistantly operate the system. The main lines will be buried and metered turn-outs will be installed. Ample head is available from the main to operate the system, water supply is adequate and additional water is available for the new lands being irrigated.

FINANCIAL FEASIBILITY ASSESSMENT:

Project costs are standard prices as determined by the Soil Conservation Service and Headwaters Resource Conservation and Development group in a study booklet published January 1984. Total development cost is $569 per acre, which is high. This cost is justified as the consistent supply of irrigation water will increase yield, new land will be brought into production and electrical costs will be saved. Projections indicate an increased net revenue in excess of $175,000, making the project positive in cash flow. Continued increases in electrical rates will result in greater financial savings to the project.

Other funds for the project of $186,300 will be in the form of in-kind services provided by the Soil Conservation Service in engineering, design, and inspection, and by the landowners for administration.

ENVIRONMENTAL IMPACT ASSESSMENT:

This project will create no appreciable changes in the environmental climate of the area. Negative changes will be almost nonexistent even during construction and positive changes will result from the improved vegetative cover on 346 acres of low condition native rangeland.

SUMMARY OF PUBLIC BENEFITS:

The direct benefits of the project are to seven family farms as owners of the 2,646-acre project, with lesser benefits to the farmers operating 20,000 acres of irrigated lands under the East Bench Canal. The major public benefit is the savings of water from the more efficient use. The Soil Conservation Service has determined an overall savings of 2,400 acre-feet of water annually, which in turn is placed back into the Madison River tributaries for use by agriculture, industry and the public. Construction of the project will generate jobs in the local area and increased income will be converted into goods and services benefiting the overall local economy.

RECOMMENDATION:

DNRC recommends a loan of $1,317,295 at an interest rate of four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local assessment from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Evergreen Water and Sewer District

PROJECT/ACTIVITY NAME: Evergreen Wastewater Collection, Treatment and Disposal Facilities

AMOUNT REQUESTED: $100,000 Grant, $3,126,900 Loan

TOTAL PROJECT COST: $10,666,600

AMOUNT RECOMMENDED: $3,226,900 Loan

PROJECT DESCRIPTION:

At present approximately 1,840 persons reside within the Evergreen Water and Sewer District located immediately north and east of the City of Kalispell. Although the district provides central water for its residents, no central sewer is provided and all residents utilize individual septic tank and drainfield systems for sewage disposal. Because of the porous nature of the soils and the large concentration of individual sewage disposal systems in the area, the area groundwaters are becoming contaminated by leachate from the individual sewage disposal systems. The contaminated groundwaters may affect area wells and may add additional nutrients to Flathead Lake.

In order to solve these problems, the district proposes to construct a complete sewage collection system, treatment and disposal facilities. The system will collect septic tank effluent in small diameter pipe and pump the collected effluent to an aerated lagoon/slow rate land application (irrigation) site located in a farming area north of Creston.

TECHNICAL FEASIBILITY ASSESSMENT:

Collection, treatment and disposal alternatives, special problems, costs, financing options and other issues are addressed in an EPA-funded facilities plan entitled "Supplemental Kalispell Vicinity 201 Facility Plan." The facilities plan is essentially a preliminary engineering study and it has been submitted to the Water Quality Bureau (WQB) for review and approval. The facilities plan, complete with selected alternative, costs, etc., will be reviewed in detail. It must be technically feasible, cost-effective and able to produce the desired effects. WQB approval of the facilities plan and the design is required before commencement of construction.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $10,666,000. Of this total estimated project cost, approximately $9,288,600 is the cost of construction and contingencies, $178,000 is the cost of land aquisition, and the balance is for engineering and administration. The application is for a grant of $100,000 and a loan of $3,126,900. This amount of loan/grant request places the applicant into the category that will utilize coal severance tax bond proceeds. Evergreen Water and Sewer District is on the Fiscal Year 1985 funding priority list to receive approximately $7,439,700 in EPA construction grant funds. Receipt of the EPA funding is, however, contingent on the district having its local share of project costs in hand. The district will apply for CDBG program grant monies in addition to the requested DNRC grant monies in order to raise the local matching funds. The district can issue Revenue Bonds upon approval of the voters within the district.

This is a rather massive project and users will pay more than $20 per month for sewer service after the system is completed. The anticipated high user costs may make it difficult to obtain district voter approval.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. The crossing of the Flathead River will be via an insulated force main attached to the existing Highway 35 bridge and will not cause any adverse environmental impacts. Elimination of the source(s) of contamination of groundwater in the area will be a definite positive impact of the project. The WQB will review the project for environmental impact as part of their normal facilities plan review procedure and the selected alternative will be approved only if no significant impact is found.

SUMMARY OF PUBLIC BENEFITS:

The residents of the Evergreen Water and Sewer District and area groundwater users will directly benefit from the project. The major benefits expected are prevention of disease and improvement of water quality.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a loan of $3,226,900 at an interest rate four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district passing the necessary bond issue and securing the necessary EPA construction grant funding. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Neihart

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $275,000 grant, $275,000 loan

TOTAL PROJECT COST: $550,000

AMOUNT RECOMMENDED: $550,000 loan

PROJECT DESCRIPTION:

Neihart presently takes surface water from an impoundment on O'Brien Creek. Chlorination facilities are present but because of design and operational problems, the water is not chlorinated continuously. Because of the lack of proper chlorine residual throughout the system, the system is not presently protected from giardia or other types of contamination. In fact, the town is under a "boil order" imposed by the Water Quality Bureau (WQB). In addition, without some type of filtration, the surface water source cannot be depended upon to meet the turbidity criteria of the National Drinking Water Standards. In addition to water source problems, Neihart has a 90-year-old, badly deteriorated water distribution system that has insufficient cover to prevent freezing. To prevent freezing, valves on the lower end of the system are opened in winter and water is wasted into Belt Creek. This practice keeps water moving in the system, which prevents freezing, but it wastes a tremendous amount of water.

Neihart has another water system related problem—a lack of storage. In 1980 the town was the recipient of a HUD grant to develop a spring source (Black Chief Spring), construct a 100,000-gallon steel storage tank and provide chlorination facilities. Because of numerous problems with the project, the system does not work and is not being used at this time.

The proposed project consists of both design and construction activities and the project will replace nearly all of the present distribution system within Neihart with adequately sized line buried at a depth sufficient to prevent freezing. A second system will be used to provide water to the residents up O'Brien Creek and on the far south end of town. The O'Brien Creek source is proposed to be abandoned, except as a source of fire flow for O'Brien Creek homes and the school area, and will not be connected to the new system. The new source of water will be Black Chief Spring.

TECHNICAL FEASIBILITY ASSESSMENT:

Some preliminary engineering has been completed on this project; however, neither a complete and comprehensive preliminary engineering study or master plan has been prepared. Complete replacement of Neihart's old, deteriorated, shallow buried water system is necessary and no reasonable alternatives exist. The proposed new distribution system would be laid out approximately like the existing system and looping of lines has been accomplished to the extent reasonable.

The proposal to abandon the O'Brien Creek source and rely on the Black Chief Spring as the sole source may in fact be the most feasible solution to the town's water source problems. It is not without problems however, because of such items as questionable sustained yield of the spring and possible conflicting water rights. Wells should have been considered as an alternative primary source and also as an auxiliary source of water. The matter of water rights to Black Chief Spring needs to be addressed and any problems satisfactorily resolved. In addition, if an auxiliary source, such as a well, is not going to be developed, a deviation from Ten State Standards will need to be issued by the WQB. The WQB will review and approve the final plans and specifications for the project before construction can commence.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $550,000, of which $488,000 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a grant of $275,000 and a loan of $275,000. Neihart has indicated a willingness to accept a grant of less than requested and a proportionately larger loan, if necessary, in order to insure timely completion of the project. The estimated costs appear to be realistic and reasonable.

The only source of funding identified for this project is the DNRC water development program loan and grant funds. The town will bond for repayment of the loan portion of the funding and water rates will be increased to meet the indebtedness. Neihart can issue G.O., Revenue or SID bonds.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only environmental impacts of this project are those short-term impacts of the construction activities. Installation of new lines and other construction activities will take place in previously disturbed areas. A benefit will be the reduced potential for disease outbreak as a result of the upgraded water system.

SUMMARY OF PUBLIC BENEFITS:

Primary benefits will be realized by the community of Neihart and the numerous visitors attracted to the nearby Showdown Ski Area. The primary benefits include prevention of possible disease and health problems, aesthetically pleasing and palatable drinking water, improving the domestic water supply, adequate fire protection and the resultant prevention of death or personal injury and property damage and conservation of water. The new system would also eliminate the high costs of repairing of the old lines.

RECOMMENDATION:

The DNRC recommends a loan of $550,000 at an interest rate of four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon Neihart passing the necessary bond issue to repay the loan. If the town is successful in securing grant assistance from CDBG or FmHA or elsewhere, the DNRC loan amount should be proportionately reduced. In addition, the DNRC funding should be conditioned on (1) submittal of proof of satisfactory resolution of the water rights question on Black Chief Spring and (2) receipt of a "deviation from Ten State Standards" on the matter of an auxiliary water source from the WCB. Any reduction in the loan amount will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: City of Glasgow

PROJECT/ACTIVITY NAME: Water Source Replacement

AMOUNT REQUESTED: $100,000 grant, $5,562,000 loan

TOTAL PROJECT COST: $5,662,000

AMOUNT RECOMMENDED: $5,662,000 loan

PROJECT DESCRIPTION:

The City of Glasgow has a population of approximately 4,450. Their municipal water system serves 2,640 customers, including 190 hydrants. The city's water is supplied from a series of nearby wells up to 150 feet deep. The water level in the aquifer has declined over the years and the city has been unable to supply the community's demands for water. Declining well yields, well failures and unsatisfactory test drilling results for well-field expansion has convinced city officials that a new long-term water supply is needed. Glasgow has investigated several alternatives and now feels the best source is Missouri River water stored in Fort Peck Reservoir. This application is for design and construction financing of an 18-mile pipeline from a Fort Peck Dam powerhouse penstock to Glasgow.

The city received a $35,000 RRD grant in 1981 and a $48,000 RIT grant in 1983 to investigate joint municipal and irrigation water supply alternatives. These alternatives were found not to be cost effective and suffered from lack of interest from proposed irrigators. The city is now considering a municipal supply project with little or no irrigation.

TECHNICAL FEASIBILITY ASSESSMENT:

Glasgow has considered many alternatives in their search for a new municipal water supply. They are convinced that local aquifers cannot provide a satisfactory long-term supply. Area test drilling in 1951-1953, 1974 and 1976, along with declining water levels, supports their position. However, the existing wells are closely spaced, which tends to accelerate local drawdown. The extent of the test drilling program should be assessed in light of these problems with consideration of wells of greater spacing.

Glasgow's surface water alternatives are limited to Fort Peck Reservoir and the Missouri River below the dam. There is an existing water supply line from the Missouri River to the Valley Industrial Park (VIP) near Glasgow. A pipeline from Glasgow to this pipeline was estimated to cost $1,528,000 in 1980. The city ruled out this option because of legal questions on pipeline ownership, marginal capacity and pipeline age (25 years). In view of the cost differential and apparent lack of use by VIP, this alternative should remain a consideration.

The proposed alternative appears to be the best way to acquire Fort Peck Reservoir water. The gravity flow and water quality aspects of this alternative are very positive. This is a good long-term water supply alternative, but it will be expensive.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed project is estimated to cost $5,662,000 with the following cost breakdown: administration $18,700, financing $288,100, professional/technical $125,000, construction $4,658,750 and contingencies $571,450. Glasgow has requested a $100,000 grant and a $5,562,000 loan. The city has applied for a $750,000 Economic Development Administration grant and is working to reduce the cost of the project.

A city bond election was held on June 5, 1984 to consider approval of $5,600,000 in bond financing for the proposed project. The request was turned down by a large margin. Officials stated that obligation of property, unfamiliarity with a new rate structure and high project cost are the main reasons for the refusal.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction of the 18-mile pipeline will require crossing the Missouri River (at the toe of Fort Peck Dam), the Milk River, various minor drainages and various highways. There will be some impact on water quality and riparian habitat. Total impact should be assessed during the design phase. Permits must be obtained for use of Fort Peck water for stream and river crossings, for water rights, and for potable water system construction.

SUMMARY OF PUBLIC BENEFITS:

The residents of Glasgow will receive the benefits associated with this project. There is a possibility of providing water to rural residents along the pipeline route. Primary benefits associated with the project include: adding and improving domestic water supply, prevention of property damage, and providing new business opportunities.

RECOMMENDATION:

DNRC recommends a $5,862,000 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

Since the residents of Glasgow voted against a request for approval of a $5.6 million dollar bonded indebtedness for this project in a June 5, 1984 election, any bonded indebtedness involving this loan shall be authorized by a city election. Use of loan funds is also contingent upon complete investigation and cost comparison of alternatives, which would include the existing water transmission line to the Valley Industrial Park and other alternatives that would eliminate the need for this extensive capital investment.

APPLICANT NAME: Yellowstone County

PROJECT/ACTIVITY NAME: Cedar Park Water Supply

AMOUNT REQUESTED: $555,000 loan

TOTAL PROJECT COST: $555,000

AMOUNT RECOMMENDED: $555,000 loan

PROJECT DESCRIPTION:

Cedar Park Subdivision is located southwest of Billings on the south side of the Yellowstone River, along Blue Creek. At present the Cedar Park Subdivision is included in RSID 588 and RSID 603. The water system is managed by the RSID 588/603 Committee, appointed by the Yellowstone County Commissioners. The present water system consists of an infiltration gallery along Blue Creek, pump house, 60,000 gallon water storage tank and several thousand feet of transmission main and distribution line. In the flood in 1978, the infiltration gallery was damaged. Since that time the infiltration gallery has operated as an unprotected, untreated surface water intake. The system is unacceptable to the Montana Department of Health and Environmental Sciences and represents a potential threat to public health. The Water Quality Bureau (WQB) of the Department has ordered that the unacceptable supply situation be corrected. In addition, the RSID's do not have proper water rights to Blue Creek and apparently have little chance of securing the needed 99 gallon per minute flow. The RSID's need to find another source of water.

The proposed project consists of [illegible] alternative solutions: (1) infiltration galleries adjacent to the [illegible] the Briarwood System and transmission of the water to the Cedar Park facility [illegible] subdivision located about one mile [illegible] of Cedar Park Subdivision [illegible] developments. The [illegible] activities associated with this project [illegible] testing of the Yellowstone River alluvium in the area to [illegible] for some technical or economic reason the proposed alternative cannot be cost effective, it will be selected.

TECHNICAL FEASIBILITY ASSESSMENT:

At this time only preliminary [illegible] has been completed. Additional study [illegible] before a final decision can be made [illegible] comparative cost estimates [illegible] The budget in the proposal appears to be sufficiently high to allow for completion of either alternative. Both of the favored alternatives are appropriate and technically feasible. The applicant indicates that the more cost effective of the two alternatives will be selected. Either of the two alternative solutions would solve water supply problems of Cedar Park Subdivision.

All proposed improvements will be reviewed and approved by the WQB prior to commencement of construction. The WQB supports the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $555,000 of which $414,890 is the cost of construction and contingencies, $15,000 is for land and the balance is for engineering and administration. The application is for a loan of $555,000. This amount of loan request places the applicant into the category that will utilize coal severance tax bond proceeds. The project is quite costly. With the 167 lots in Cedar Park Subdivision, the debt service of the improvements will cost residents about $40 per month. Since there is no real alternative to incurring this cost however, the residents appear willing to pay the cost. Another RSID will be created and will use RSID bonds in order to repay the DNRC loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impact that will result from this project are those minor, short-term impacts typically associated with municipal construction projects. Positive impacts will result from development of a new, acceptable source of water for Cedar Park Subdivision.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit the residents of Cedar Park Subdivision. The primary benefits will be prevention of disease and adding a domestic water supply.

RECOMMENDATION:

The DNRC recommends a loan of $555,000 at an interest rate of four percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the creation of either a Rural Improvement District or County Water and Sewer District, and the district passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Cooke Pass-Cooke City-Silver Gate County Water and Sewer District

PROJECT/ACTIVITY NAME: Sanitary Sewer System

AMOUNT REQUESTED: $336,730 grant

TOTAL PROJECT COST: $1,086,730

AMOUNT RECOMMENDED: $336,730 loan

PROJECT DESCRIPTION:

The applicant is a public agency located in Park County near the northeast entrance to Yellowstone Park. Cooke City has 33 permanent residences and 47 summer homes and cabins, with an estimated permanent population of approximately 80 people. Silver Gate has 5 permanent residences and 24 summer homes, with an estimated permanent population of 20 people. The settlements have a total of about 16 commercial establishments that operate year around and 30 establishments that operate only in the summer tourist season. All of the residences, whether permanent or summer, and all of the commercial establishments use individual septic tank/drainfield systems or some other method (cesspools or seepage pits) for disposal of sewage. Many of the on-site disposal systems have failed for one reason or another, which has resulted in deterioration of the quality of the area surface waters (Soda Butte Creek) and contamination of ground waters. The failed systems have resulted in creation of a severe potential public health hazard and odorous conditions as a result of surfacing sewage. Because the area has unsatisfactory conditions for on-site, individual sewage disposal systems, Park County officials have placed sanitary restrictions on the area, which has eliminated growth and will inhibit future development.

In order to solve the sewage disposal problems, the district proposes to construct a complete sewage collection system and disposal facilities. The system will collect septic tank effluent in small diameter pipe and pump the collected effluent to a properly designed and located community subsurface soil absorption system. Cooke City and Silver Gate will each be served by a collection system, pump station and community soil absorption system. The two systems will not be connected but will be owned, operated and maintained by the district.

TECHNICAL FEASIBILITY ASSESSMENT:

Alternatives, special problems, costs, financing options, and other issues were addressed in an EPA funded facilities plan. The proposed method of solving the district's sewage treatment problems appears to be technically sound and will produce the desired effects. It's also the most cost effective alternative considered. The design will have to be reviewed and approved by the Water Quality Bureau before construction begins.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $1,086,730. Of this total estimated project cost, approximately $771,490 is the cost of construction and contingencies, $170,000 is the cost of land acquisition, and the balance is for engineering and administration. The application is for a grant of $336,730. This amount of loan/grant request places the applicant into the category that will utilize coal severance tax bond proceeds. The district is on the Fiscal Year 1985 funding priority list to receive approximately $750,000 in EPA construction grant funds. Receipt of the EPA funding is, however, contingent on the district having its local share of project costs in hand. The district will apply for Community Development Block Grant program grant monies in addition to the requested DNRC grant monies in order to raise the local matching funds. The district can issue revenue bonds, upon approval of the voters within the district.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with similar construction projects. The two stream crossings (one in Silver Gate and one in Cooke City) will obviously involve instream work and result in an unavoidable, brief increase in turbidity in Soda Butte Creek. The applicant will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local Conservation District and a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB for the instream work. The above permitting processes are structured to minimize the impacts of necessary instream construction activities.

Construction of the proposed project will have a positive impact on the environment in that potential hazards to public health and ground and surface water contamination will be eliminated. Elimination of the contamination of Soda Butte Creek is of prime importance because the stream flows into Yellowstone National Park.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit the residents of Cooke City and Silver Gate and indirectly benefit Yellowstone Park visitors and downstream water users in the Yellowstone River Basin. Correction of the failed individual sewage disposal systems and subsequent elimination of surfacing raw sewage and contamination of area groundwater and surface waters will prevent disease, improve land and water quality, enhance fish and wildlife habitat, improve recreational opportunities, prevent property damage and provide new business and employment opportunities. The latter benefit will be a result of business and residential growth that will occur when the sanitary restrictions are lifted in the area.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a loan of $336,730 at an interest rate three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district passing the necessary bond issue and securing the necessary EPA construction grant funding. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: City of Fort Benton

PROJECT/ACTIVITY NAME: Water Supply Project

AMOUNT REQUESTED: $753,060 loan

TOTAL PROJECT COST: $753,060

AMOUNT RECOMMENDED: $753,060 loan

PROJECT DESCRIPTION:

Fort Benton, population approximately 1,700, presently utilizes Missouri River water that is treated by a conventional surface water treatment plant constructed in 1934 and upgraded in 1965, 1978 and 1980. The treatment plant provides good quality water but has insufficient capacity for meeting the city's present and future needs. In addition, the existing water treatment plant does not comply with the requirements of the Montana Pollutant Discharge Elimination System (MPDES) with respect to its discharge of filter backwash and other pollutants into the Missouri River. The Water Quality Bureau (WQB) has placed Fort Benton on a compliance schedule to correct its discharge problem. The city needs either a replacement of the treatment plant, acceptable quality water source or additional source to meet its water needs and it needs to eliminate its unacceptable filter backwash discharge.

The proposed project consists of design and construction of a new 3.0-million gallons per day induced infiltration system to supply the present and future water needs of Fort Benton. The particular system chosen is a proprietary process called the "Ranney Method." It will provide the water needed and eliminate all unacceptable waste discharges to the Missouri River.

TECHNICAL FEASIBILITY ASSESSMENT:

In 1983 and 1984, an extensive engineering feasibility study on the city's water supply problems was conducted. With respect to the chosen alternative of induced infiltration (Ranney Method), the Ranney Method Western Corporation conducted a hydrogeological survey and suitability evaluation of the site. The studies were comprehensive; numerous alternative solutions were studied, including renovation of the existing water treatment plant, building a new water treatment plant, developing new alluvial well system and the selected alternative, construction of a new induced infiltration system. A cost effective and technical comparison was made on each alternative. The studies indicate that the proposed alternative solution should be successful and should solve Fort Benton's supply problem. The WQB supports the method selected.

The design of the system will have to be approved by the WQB prior to commencement of construction. The proposed project appears to be technically feasible and cost effective.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $753,060, of which $631,460 are costs of construction and contingencies and the balance is engineering, financing and administration. Because of the nature of the process selected, the construction costs for the Ranney Method portion of the project actually include the costs of some project engineering provided by the Ranney Method Western Corporation. The application is for a loan of $753,060. The estimated project costs appear to be realistic and reasonable and it appears as though the most cost effective, acceptable alternative was chosen.

Fort Benton will fund the project by issuance of Revenue Bonds. The current water rates will have to be increased significantly to meet the indebtedness. The city has the authority to issue G.O., Revenue, and S.I.D. bonds.

ENVIRONMENTAL IMPACT ASSESSMENT:

The proposed project is not expected to create any long-term adverse environmental impacts. Any short-term impacts associated with construction (short-term increase instream turbicity) will be offset by a long-term improvement due to elimination of the present unacceptable discharge of filter backwash into the Missouri River. It is likely that since construction work will be done either in or near the Missouri River, a short-term increase in turbidity in the Missouri River will result. The applicant will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local Conservation District and a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB for any work instream or adjacent to the stream which may result in an increase in turbidity. The above permitting processes are structured to minimize the impacts of necessary instream construction activities.

Construction of the project will have a positive impact on the environment in that a source of pollution (filter backwash) of the Missouri River will be eliminated.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Fort Benton. The major public benefits will be solving another identified problem attributable to the resource (elimination of the discharge of filter backwash), resource conservation (more efficient use of potable water—no need to backwash) and adding domestic water supply.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a loan of $753,000 at an interest rate three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon Fort Benton passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Lakeside County Sewer District

PROJECT/ACTIVITY NAME: Lakeside Wastewater Collection Treatment and Disposal Facilities

AMOUNT REQUESTED: $300,000 grant, $500,000 loan

TOTAL PROJECT COST: $3,158,330

AMOUNT RECOMMENDED: $800,000 loan

PROJECT DESCRIPTION:

At present the approximately 400 homes and commercial establishments located in the Lakeside County Sewer District utilize individual septic tank and drainfield systems for disposal of sewage. Because of the nature of the area, many of the individual disposal systems have failed and the resultant surfacing sewage is a potential hazard to public health. Recently individual wells in the area have also become contaminated as a result of inadequately treated sewage from the area subsurface disposal systems. In addition, the present method of sewage disposal in the Lakeside area is adding nutrients to Flathead Lake, which has been found to be aging at an unacceptable accelerated rate.

In order to solve these problems, the sewer district proposes to construct a complete sewage collection system, treatment and disposal facilities. Treatment will consist of an aerated lagoon followed by a storage pond. Disposal will consist of a slow rate land application system (irrigation of an adjacent forested area). The system will be located away from the Flathead Lake shore area and will be designed for no discharge into area watercourses.

This project consists of both design and construction activities and has been approved and is supported in principle by the Water Quality Bureau (WQB) of the Montana Department of Health and Environmental Sciences. The Lakeside County Sewer District will most likely receive an EPA grant by October 1, 1984.

TECHNICAL FEASIBILITY ASSESSMENT:

Alternatives, special problems, costs, financing options, local opinion and numerous other items were covered in detail in an extensive facilities plan. The facilities plan was approved by the WQB and meets EPA requirements. The proposed method of solving the district's sewage treatment problems appears to be not only technically and economically feasible but also a practical, environmentally sound and cost effective solution. The final design will have to meet the "Ten States Standards" and be approved by the WQB.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $3,158,330. Of this total estimated project cost, $2,565,630 is the cost of construction, $92,800 is the cost of land acquisition, and the balance is for engineering, administration and legal. The district will receive an EPA grant commitment for the project of approximately $2,358,330 by October 1, 1984. The remaining local share of approximately $800,000 will be financed by a District Revenue Bond. The application is for a grant of $300,000 and a loan of $300,000. Since the amount of the requested loan/grant places the applicant into the category that will utilize coal severance tax bond proceeds the district may as well request the entire local share ($800,000) from DNRC rather than only $600,000.

The Lakeside County Sewer District can issue Revenue Bonds, upon approval of the voters within the district. A bond election was held in July of 1984 and the district board was authorized to issue bonds for the local share of the project cost.

SUMMARY OF PUBLIC BENEFITS:

The primary beneficiaries of this project will be the residents of the Lakeside County Sewer District. However, because the project will result in removal of a source of nutrient pollution of Flathead Lake and thereby slow the aging and deterioration in water quality of the lake, the entire Flathead Valley, State of Montana and numerous out-of-state visitors will be benefited by the project. The major public benefits from this project are as follows: elimination of a present public health hazard (prevention of disease), elimination of a source of pollution (primarily nutrients) of Flathead Lake (improving water quality and enhancement of fish habitat), and elimination of a source of contamination of the groundwater in the area that is used as a potable water supply for more than 400 homes and businesses. In addition, the central sewer system will probably enhance property values in the district. At least one full time job will be created by the project and business opportunities should be created as a result of removal of the constraints on building caused by sanitary restrictions on land within the district.

ENVIRONMENTAL IMPACT ASSESSMENT:

All major construction projects result in a few minor, short-term environmental impacts. In general, however, this project should enhance the environment by eliminating the serious public health hazard created by failed septic tank/drainfield systems and by eliminating a sizeable source of nutrients to Flathead Lake. The environmental impact of the project was addressed in depth in the approved Facilities Plan for Lakeside County Sewer District. No significant environmental impacts were anticipated.

RECOMMENDATION:

The DNRC recommends a loan of $800,000 at an interest rate of three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district securing the necessary EPA construction grant funding. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Lima

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $250,000 grant, $126,500 loan

TOTAL PROJECT COST: $711,700

AMOUNT RECOMMENDED: $376,500 loan

PROJECT DESCRIPTION:

Lima presently has a population of 260. The existing water system consists of a spring (located about 3.4 mile south of the community) and several thousand feet of 6-inch, 4-inch, and 1-inch diameter distribution lines. No storage facilities exist. Most of the existing distribution system is both undersized and deteriorated and many lines are not looped. Water pressures are low throughout the system and many lines have diminished capacity. Essentially, most of the distribution system needs to be replaced with 6-inch or larger pipe and looping of lines is needed. In addition, both a storage reservoir and a new larger transmission line into town is needed. A storage reservoir will provide additional fire flows and a new larger transmission line into town will carry higher flows with less headloss.

The proposed project consists of design and construction of the following system improvements: 100,000-gallon storage reservoir located near the existing spring, 5,300 feet of 12-inch transmission line from the new storage reservoir into town, 15,250 feet of 12-inch, 8-inch and 6-inch distribution line, 5 control (gate) valves, 24 fire hydrants with auxiliary valves, new service connections and miscellaneous other improvements.

TECHNICAL FEASIBILITY ASSESSMENT:

In June of 1984, a consulting engineering firm prepared "An Engineering Report for Improving the Domestic Water Facilities for the Town of Lima, Montana." This engineering study evaluated the existing water system and proposed appropriate solutions to any deficiencies found. The proposed project will solve the problems with the present system, the alternatives selected appear to be appropriate and the estimated costs appear to be reasonable.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $711,700 of which $601,550 are costs of construction and contingencies and the balance is engineering, financing and administration. The application is for a grant of $250,000 and a loan of $126,500. Lima is making application to the Community Development Block Grant (CDBG) program for the remaining $335,200 in project costs.

The town has indicated that the project will be phased if the CDBG program grant is not received. A loan in lieu of a portion of the requested DNRC grant will be considered. Lima will probably meet its share of project costs by issuance of Revenue Bonds. The current water rates will have to be increased significantly in order to meet debt service payments. The estimated costs appear to be realistic and the most cost effective solutions appear to have been chosen.

ENVIRONMENTAL IMPACT ASSESSMENT:

Only the usual short-term environmental impacts associated with this type of municipal utility construction are anticipated.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Lima. The major benefits will be prevention of death or personal injury (by providing the facilities needed for adequate fire protection), prevention of disease (replacement of leaking, undersized lines which could become contaminated), improving the domestic water supply, resource conservation (eliminating system leakage), and improving the availability of the resource (looping and increasing line size will improve water quantity and pressures to most residents).

RECOMMENDATION:

The DNRC recommends that Lima receive a loan of $376,500 at an interest rate of three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the town passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Poplar

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $224,315 grant, $252,945 loan

TOTAL PROJECT COST: $897,260

AMOUNT RECOMMENDED: $477,260 loan

PROJECT DESCRIPTION:

Poplar, located on the Fort Peck Indian Reservation, has a population of about 1,000. However, the town provides basic municipal services such as water, sewer, garbage, fire protection, etc. to a total population of about 3,000 located both within the city limits and adjacent to town. Poplar's existing water system consists of two wells, several thousand feet of 8-inch, 6-inch, and 4-inch diameter distribution lines and two 100,000-gallon, elevated steel storage tanks. One of the storage tanks, constructed in 1917, is in a deteriorated condition and should be taken out of service. Several distribution system lines in town are undersized and/or in a deteriorated condition and need to be replaced. Poplar also needs additional water storage facilities in order to retire the old storage tank and provide sufficient storage capacity for fire flows.

The proposed project consists of design and construction of the following system improvements: a 500,000-gallon elevated storage reservoir, 2,300 feet of 12-inch and 2,000 feet of 8-inch distribution line, 9 control (gate) valves, 7 fire hydrants, a new well and a new pump/storage tank level control system.

TECHNICAL FEASIBILITY ASSESSMENT:

Poplar had an engineering firm prepare a brief preliminary engineering report on the proposed water system improvements. The report addresses the water system deficiencies and proposes solutions, complete with cost estimates. Conceptually, the proposed solutions appear to be appropriate. The problem of undersized and deteriorated lines can only be solved by replacement with properly sized and constructed lines. The storage problem can only be solved by provision of additional larger storage facilities; although the size of such storage facilities should be optimized and alternatives to elevated storage should be considered. The proposed project will solve the problems with the present system. The estimated project costs appear to be reasonable.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the proposed project is $897,260 of which $787,260 are costs of construction and contingencies and the balance is engineering, financing and administration. The application is for a grant of $224,315 and a loan of $252,945. The town will receive a U.S. Indian Health Services grant, through the Assiniboine and Sioux Tribal Housing Authority, of $420,000 for the project since it will benefit tribal housing developments located adjacent to the town. In addition, Poplar has received a $250,000 grant from the Economic Development Administration (EDA). If the EDA grant is successful, the amount of funding requested from DNRC will be reduced. The local share (DNRC/loan) of the project costs would most likely be met by the issuance of revenue bonds, although the town hasn't yet decided which type of bonds would be sold. Poplar can issue G.O., Revenue and S.I.D. bonds. Water user fees would have to be increased significantly to repay the local debt incurred to fund the improvements.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts anticipated with this project are those short-term impacts typically associated with this type of municipal utility construction.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the present and future users of Poplar's water system, which includes the residents of Poplar and the residents of the area immediately adjacent to the town. The major benefits will be prevention of death or personal injury (by providing the facilities needed for adequate fire protection), prevention of disease (replacement of deteriorated and undersized lines which are capable of becoming contaminated) and improving the domestic water supply.

RECOMMENDATION:

The DNRC recommends a loan of $477,260 at an interest rate of three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon Poplar passing the necessary bond issue and securing the other necessary funds. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Roosevelt County Rural Water District

PROJECT/ACTIVITY NAME: Roosevelt County Rural Water System

AMOUNT REQUESTED: $555,000 Grant and $1,664,124 Loan

TOTAL PROJECT COST: $2,219,124

AMOUNT RECOMMENDED: $2,219,124 Loan

PROJECT DESCRIPTION:

The proposed rural water system would supply 183 users in a six- by twenty-mile area north of Culbertson. The system will supply farmers and ranchers with domestic and stock water, as well as provide municipal water for the communities of Froid and Fort Kip. Approximately 30 percent of the rural area residents currently haul water. The remainder use wells (30-300 feet deep) which generally supply poor quality water. Water quality problems include hardness, high concentrations of iron, sulfates, and dissolved solids. One well which serves 30 families was found to contain selenium (a toxic material) in levels which exceed federal safe drinking water standards. Water shortages are also a problem. Froid has had to ration water and many rural wells run dry frequently.

The proposed central distribution system will consist of PVC pipe and will carry water from Culbertson's water treatment system to the district members. An underground reservoir with booster pumps and in-line boosters to supply pressure and demand is also part of the proposed system.

TECHNICAL FEASIBILITY ASSESSMENT:

Preliminary designs and layouts for the proposed system were developed for the applicant by an engineering firm. Trickle flow systems are often the design chosen for projects of this type; however, in this case, the engineers recommended a pressure system capable of full peak period service. This recommendation was made after preparing preliminary designs and cost estimates for both types of systems. The water system will receive its supply from Culbertson's new water treatment facility. Culbertson is proceeding with this project under partial water development program financing.

Since the application is for both final design and construction funding, no detailed plans of the system have been prepared. Given the exended distances and dead-ended lines, the design will require detailed hydraulic analyses and careful placement of appurtenances. As with other water systems, the completed design will require review and approval by the state's Water Quality Bureau (WQB).

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated to be $2,219,124 with the following cost breakdown: administration $16,800, financing $218,240, professional/technical $117,600, construction $1,678,000, and contingencies $306,084. The Roosevelt County Rural Water District has requested a $555,000 grant and a $1,864,124 loan. They plan to also apply for project financing from the Farmers Home Administration and the Community Development Block program.

A water user's monthly bill for 5,500 gallons of water would be $125 if the project were financed under a nine percent loan and no grant.

ENVIRONMENTAL IMPACT ASSESSMENT:

The project will include many miles of ditch excavation for the water system pipeline. Construction activities are expected to result in short-term erosion problems and loss of vegetation. Much of the construction will parallel existing roads and public right-of-way. Final impacts should be addressed in the design and permitting phase. There are no expected long-term negative impacts. Following construction, complete reclamation will be required to correct land disturbance.

SUMMARY OF PUBLIC BENEFITS:

The residents of Froid, Fort Kip, and a 120-square-mile rural area would receive benefits from this project. Primary project benefits include: adding and improving domestic and agricultural water supply, prevention of disease, prevention of property damage and providng new business opportunities.

RECOMMENDATION:

DNRC recommends a $2,219,124 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be three percentage points below the bond rate at which the state bond is sold for the first seven years, and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: Worden/Ballantine Yellowstone County Water and Sewer District

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $500,000 loan

TOTAL PROJECT COST: $500,000

AMOUNT RECOMMENDED: $500,000 loan

PROJECT DESCRIPTION:

The communities of Worden and Ballantine are in the process of creating the Worden/Ballantine Yellowstone County Water and Sewer District. Presently, each community is reponsible for operation and maintenance of its own distribution system and the two communities share the operation and maintenance costs of the joint facilities, i.e. the pump station, collection drain, transmission line and storage tank. The administrative organizations that presently exist are the Worden Community Water Association (for Worden) and Rural Special Improvement District No. 504 (for Ballantine). A petition has been submitted to the Yellowstone County Commissioners for creation of the county water and sewer district and the communities are proceeding with steps for submittal to the voters. The water district will be a public agency serving a present population of approximately 600 persons in the two communities.

The joint water system presently has insufficient storage capacity for adequate fi[illegible] flows [illegible] efficient operation of the water supply pumps. Additional storage capacity is needed. In addition, water distribution lines in the communities are undersized and need to be replaced with larger lines in order to handle fire flows. The lines will be replaced in the future as a second step of the overall upgrading program. The first and most critical step in the upgrading program is providing adequate storage capacity.

The proposed project consists of design and construction of a 540,000-gallon ground level storage reservoir, located about 1/2 mile south of the present elevated water tank, 2,300 feet of 16-inch transmission line from the storage reservoir to the existing pump house, valves and metering, a new chlorine room at the existing well house and a level control/telemetering system for the new storage reservoir.

TECHNICAL FEASIBILITY ASSESSMENT:

In 1981, the "Worden-Ballantine Water System Master Plan" was prepared for the Worden Water Users Association and Rural Special Improvement District No. 504. This engineering study evaluated the existing water system in view of present and anticipated future needs and proposed appropriate solutions to any deficiencies found. The study was updated in 1984. Where appropriate, alternative solutions were considered. Construction of a ground level storage reservoir located on a hill to the south of the communities was found to be more cost effective and serviceable than elevated storage or a reservoir located at ground level in Worden operated with booster pumps complete with auxiliary power.

The proposed solution to the district's water storage problem is appropriate and should meet the district's storage needs for at least twenty years. As indicated earlier, however, significant improvements will need to be made to the two distribution systems before needed fire flows can be delivered. Such needs have been noted and the district plans to make such improvements as soon as practicable.

The design for the project will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. Crossings of the Burlington Northern Railroad lines and the Huntley Ditch are required and appropriate permits will have to be obtained prior to such crossings. In addition, the district must acquire the land for the storage reservoir (negotiations are underway) and the easements for the transmission line.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated to be $500,000 of which $405,200 are costs of construction and contingencies and the balance is engineering, financing and administration. The application is for a loan of $500,000 from coal severance tax bond proceeds. No additional funding sources are identified or needed. The district has indicated it would sell special improvement bonds to repay the indebtedness. The estimated costs appear to be realistic and reasonable and it appears as though the most cost effective alternative was chosen.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse environmental impacts that will result from this project are those minor, short-term effects typically associated with municipal utility projects. No stream crossings or work near streams will be undertaken. The crossings of the railroad lines and the Huntley Ditch will be made by tunneling or jacking.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of the communities of Worden and Ballantine. The major benefits will be provision of sufficient storage facilities for fire protection and improving the domestic water supply. Provision of the additional storage facilities and pump control system should decrease wear and tear on the existing pumps, which will extend their useful lives and reduce maintenance costs.

RECOMMENDATION:

The DNRC recommends a loan of $500,000 at an interest rate of three percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

Group C

APPLICANT NAME: City of Bozeman

PROJECT/ACTIVITY NAME: Lyman Creek Water System Improvements

AMOUNT REQUESTED: $726,079

TOTAL PROJECT COST: $807,566

AMOUNT RECOMMENDED: $726,079 Loan

PROJECT DESCRIPTION:

The City of Bozeman obtains its municipal water supply from surface water flows in three local watersheds. Municipal water demands exceed the city's reliable water supply by more than 20 percent during dry years. In addition to a supply shortage, the city is concerned over potential Giardia lamblia contamination in Lyman Creek which is one of their three existing sources. Contamination of this source would increase current water supply problems.

The Lyman Creek system water source originates primarily from springs. Water is diverted from the creek some distance below the springs and stored in an open reservoir. The open creek channel and open storage facility pose a continued contamination threat. The city has requested funds to enclose all exposed portions of the system to eliminate the potential problem. An alternative treatment option was determined to be more costly.

TECHNICAL FEASIBILITY ASSESSMENT:

Water from the Lyman Creek system is considered good in quality and has required only flouride and chlorine treatment. Lyman Creek provides a gravity flow supply to all Bozeman customers north of Interstate 90. The North Side customers use less than five percent of the city's total supply. This indicates the Lyman Creek source is not a major contributor of regular consumer demand. However, the supply is used to supplement the remaining supplies and as an emergency source of water for the entire community.

The Water Quality Bureau has assessed the Giardia lamblia problem as a serious threat to the community water supply. The Bureau recommended total enclosure or treatment of the supply as soon as possible. The City has chosen the enclosure option under a phased construction plan. Phase I involves construction of a cover over the storage reservoir. Phase II will extend the pipe conveyance upstream to the springs. The final phase will construct an enclosed spring box. All three phases must be finished to completely eliminate the contamination threat.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated at $807,566. The city has requested a grant of $726,079 and would contribute a total of $81,487. Phases I through III are expected to cost $255,116, $492,942, and $67,280 respectively.

Current water and sewer rates for an average residential user are estimated at $19 per month, including an anticipated water rate increase for existing improvements.

ENVIRONMENTAL IMPACT ASSESSMENT:

Project construction impacts should be of short duration and limited to the boundaries of the water supply system. Long-term impacts will include preservation of a good quality water supply for the community and increased public access to 250 acres of city property. No significant adverse impacts are anticipated.

SUMMARY OF PUBLIC BENEFITS:

Prevention of potential water supply related health hazards for a portion of the Bozeman community is the primary public benefit. Prevention of the introduction of surface water contaminants including giardia will preclude costly treatment. Other contaminants such as aerial spraying and dust will also be avoided. In general the project would improve water quality and enhance the domestic water supply.

Indirect benefits will include the potential for the city to better utilize their existing supply and reduce water treatment costs.

RECOMMENDATION:

DNRC recommends a $726,079 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be two percentage points below the rate at which the state bond is sold for the first seven years, and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements. Loan proceeds may be used for the initial phase of the proposed three-phase construction provided the city makes a commitment to complete the following phases in a reasonable amount of time.

APPLICANT NAME: Charlo Water Users Association

PROJECT/ACTIVITY NAME: Distribution System Replacement

AMOUNT REQUESTED: $ 67,360 grant, $202,080 loan

TOTAL PROJECT COST: $269,440

AMOUNT RECOMMENDED: $269,440 loan

PROJECT DESCRIPTION:

The community of Charlo is supplied domestic water by the Charlo Water Users Association, a nonprofit corporation. The association serves approximately 250 residents of Charlo. At present the water system consists of a well, 30,000-gallon elevated storage tank and several thousand feet of distribution line. Much of the distribution line, approximately 8,700 feet, is 4-inch and 6-inch wood stave pipe. The wood stave pipe is war surplus material and was installed in the late 1940's. The wood stave pipe is obsolete, deteriorating and leaky, and very difficult to repair. It is estimated that at least 30% of the water pumped into the water system is lost through leakage from the wood stave pipe sections. In addition, the wood pipe appears to impart a bad taste to the community's water in recent years (probably because of bacterial growth on the pipe walls) and because of numerous leaks it periodically becomes contaminated. In 1984 the Montana Department of Health and Environmental Sciences issued a "boil order" for the Charlo water system because of high bacterial counts in water samples taken throughout the system. The deteriorated, leaky sections of wood stave pipe need to be replaced with new pipe.

The proposed project consists of design and construction of the following improvements: 550 feet of 8-inch line, 8,150 feet of 6-inch line, one 8-inch and sixteen 6-inch control (gate) valves, 14 fire hydrants, 126 service replacements and other appurtenances.

TECHNICAL FEASIBILITY ASSESSMENT:

Preliminary engineering has been completed on this project by High Valley Engineering. Because of the nature of the problem in Charlo, consideration of numerous alternative solutions was not appropriate. A preliminary cost estimate has been prepared for the project. The proposed project is appropriate and technically feasible. It will produce the desired results.

The design of all improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB supports the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $269,440, of which $233,579 is the estimated cost of construction and contingencies and the balance is for engineering and administration. The application is for a grant of $67,360 and a loan of $202,080. This amount of loan/grant request places the applicant into the category that will utilize coal severance tax bond proceeds. The Charlo Water Users Association cannot bond for improvements. Therefore, a county water and sewer district will have to be formed and the new district then will issue revenue bonds to cover the loan amount, upon approval of the voters within the district. Present water use charges will have to be increased significantly to repay the DNRC loan. The estimated project costs appear reasonable and realistic and the apparent most cost effective alternative has been selected.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with similar municipal projects. Positive impacts will result from elimination of a potential health hazard and conservation of groundwater.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will directly benefit the residents of Charlo. The major benefits include prevention of disease (elimination of the leaky, easily contaminated wood stave water lines), resource conservation (elimination of leaks), prevention of property damage by increasing the delivery capacity of the water lines (thereby enhancing fire protection), and providing new business opportunities. Eliminating the "boil order" and improving fire protection will remove an obstacle to growth of the business community in Charlo.

RECOMMENDATION:

The DNRC recommends a loan of $269,440 at an interest rate two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon formation of a rural improvement district or county water and sewer district and upon the district passing the necessary bond issue.

Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: City of East Helena

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $434,434 Loan

TOTAL PROJECT COST: $434,434

AMOUNT RECOMMENDED: $434,434 loan

PROJECT DESCRIPTION:

East Helena, population about 1,650, presently relies on two wells and McClellan Creek for its municipal water supply. Because of contamination of the McClellan Creek source, the city stopped using the water in 1983. The two wells were able to meet East Helena's winter time (low flow) water needs but were not able to meet the amount needed during the summer months. As a result, water rationing was placed into effect. The McClellan Creek supply is open to contaminants such as Giardia lamblia, and the Water Quality Bureau (WQB) of the Montana Department of Health and Environmental Sciences has recommended that the city stop using McClellan Creek water, if possible, and boil the water if it must be used. East Helena must develop a suitable adequately protected source to replace the presently inadequate and unacceptable McClellan Creek supply.

The proposed project consists of design and construction of an infiltration gallery in the alluvial deposits along McClellan Creek, pump station and chlorination facilities. The perforated collection pipe will be positioned approximately 20 feet below the ground surface to insure adequate filtration of collected water.

TECHNICAL FEASIBILITY ASSESSMENT:

In September of 1983, the city hired a consulting engineering firm to study and devise a suitable cost-effective solution to the city's water problems. The engineering study evaluated the present water problems and proposed five appropriate alternative solutions. Based on present knowledge of the alluvial deposit in the area of the proposed infiltration gallery, the infiltration gallery should produce the desired amount of suitable quality water. However, a detailed hydrogeological study will be conducted of the area as part of the design stage and if the production or filtering capability of the deposit becomes suspect, the second choice alternative will be pursued, namely, development of new wells in the valley. This choice was actually found to be less costly than the selected alternative but was not as desirable to East Helena. At this point, it would appear that either alternative is technically feasible, appropriate, and could produce the desired results.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $434,434 of which $366,649 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a loan of $434,434. East Helena is also making application to the Community Development Block Grant (CDBG) program for a grant of $434,434. The Department of Natural Resources and Conservation loan will be used only if the CDBG application is unsuccessful. The estimated project costs appear to be realistic and reasonable and it appears as though a cost-effective alternative, although apparently not the most cost-effective alternative, was chosen.

East Helena will bond for repayment of the loan portion of the funding package and water rates will be increased significantly to meet the indebtedness. The city can issue G.O., Revenue or SID bonds. An increase in water use rates of the magnitude required by East Helena would require PSC approval.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. No work will be undertaken in McClellan Creek.

SUMMARY OF PUBLIC BENEFITS

The project will benefit primarily the residents of East Helena. The major benefits will be prevention of disease and improving and adding to a domestic water supply.

RECOMMENDATION:

The DNRC recommends a loan of $434,434 at an interest rate two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon East Helena passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: Town of Ekalaka

PROJECT/ACTIVITY NAME: Water System Renovations

AMOUNT REQUESTED: $395,250

TOTAL PROJECT COST: $395,250

AMOUNT RECOMMENDED: $395,250 Loan

PROJECT DESCRIPTION:

Ekalaka has a population of 625 people and services 330 municipal water accounts. The town has the only monitored water system in the county, and many rural residents haul water from the system to their homes up to 50 miles away. The water system was originally installed in 1935, and much of the system exists as originally built. Portions of the system now require replacement and upgrading, for which Ekalaka has requested financial assistance.

The town recently completed a study of their water and sewer systems and prioritized the necessary capital improvements. Prior to this study, they did not have an organized improvement program. In recent years, maintenance costs have increased substantially and system reliability has decreased. Their current approach is to renovate critical parts of the system as soon as possible and improve remaining components over a longer term.

TECHNICAL FEASIBILITY ASSESSMENT:

The town's water distribution system has many deterioriated and undersized water mains. In some instances, the lines are not looped. Some areas experience low pressures on a regular basis and cannot support fire flows. The town has had to repair ten water main breaks in the last six months. In many cases, major parts of the system must be shut off to repair a single leak because of inadequate valves. Such shut-downs result in both fire and health hazards.

The water system also needs a reliable secondary water source and an increased water supply for fire flows. This is supported by the need for water rationing in recent years. Renovation of an existing well and installation of emergency power to another well will solve these problems.

In general, the need for the project is well supported and the proposed improvements offer a reasonable solution.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed project cost is estimated to be $395,000. The request includes: administration $14,000, financing $14,762.50, professional/technical $41,762.50, construction $298,475, and contingencies $25,500.

Ekalaka has requested the entire amount as a grant but has indicated it is willing to accept a partial loan. The town plans to apply to either the Farmers Home Administration or the Community Development Block Grant program for funding in the near future.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction impacts should be limited to the typical short-term effects of waterline construction. The impacts should occur within the existing water system boundaries. No major adverse impacts are expected.

Completion of the project will result in increased social value to the town. Health and fire hazards attributed to the water system will be substantially reduced.

SUMMARY OF PUBLIC BENEFITS:

Project benefits will be received by the residents of Ekalaka and rural residents who obtain water from the town. Primary benefits include: adding and improving a domestic water supply, prevention of property damage, prevention of disease and improving water quality.

RECOMMENDATION:

DNRC recommends a $395,250 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be two percentage points below the rate at which the state bond is sold for the first seven years, and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility user fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: City of Havre

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $2,590,000 loan

TOTAL PROJECT COST: $3,066,000

AMOUNT RECOMMENDED: $2,590,000 loan

PROJECT DESCRIPTION:

Havre has a population of approximately 11,000. The existing water system consists of wells, a Milk River intake and treatment plant, 4.5 million gallons (MG) of storage and miles of distribution lines. The Milk River source is of higher quality than the wells and produces approximately 50% (2.5 million gallons per day [mgd]) of the water used.

Water is diverted from the Milk River by means of a weir (small dam) across the Milk River about one-half mile north of Havre. The weir has fallen into a state of disrepair and is in danger of collapse. A failure of the weir would result in the city losing half of its water supply. The water treatment plant is approximately 35 years of age and several components are in need of repair, replacement, and reconstruction. In addition, the city's existing water storage reservoirs have deteriorated somewhat and are in need of repair and repainting. Havre also needs additional storage capacity. During the last several years, water rationing has been implemented because of insufficient storage capacity. Other priority water system needs are a new, larger diameter main from the water treatment plant into the city, a water main from the proposed storage reservoir (to be constructed as part of this project), two pressure-reducing stations and replacement of numerous undersized and deteriorated distribution lines and fire hydrants.

The proposed project consists of design and construction of the following water system improvements: repair of Milk River weir, install two pressure-reducing stations, upgrade water treatment plant, repair existing storage reservoirs, install 1,450 feet of new 16-inch water main from the water treatment plant east, construct a 3.5-MG water storage reservoir, install 4,100 feet of 16-inch line from the proposed new storage reservoir to the existing distribution system and replacement of several hundred feet of distribution line and several fire hydrants. The scope of the last item will depend on the amount of funds that remain after completion of the other preceding items.

TECHNICAL FEASIBILITY ASSESSMENT:

In 1972, Havre hired a consulting engineering firm to evaluate the municipal water system and identify and prioritize needed improvements. The study was quite comprehensive and is used for planning water system improvements. With the exception of the new 3.5-MG water storage reservoir, the project follows the recommendations of the 1972 study. The need for the additional storage facilities has developed since 1972. The proposed project is appropriate and technically feasible and will produce the desired effects.

The design of the proposed improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. Conceptually, the WQB agrees with the entire project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $3,066,000 of which $2,803,000 are costs of construction and contingencies and the balance is engineering, administration and financing. The application is for a loan of $2,590,000. The estimated project costs appear to be realistic and reasonable and it appears as though the most cost effective alternatives were chosen.

Havre has already received a $476,000 Community Development Block Grant (CDBG) to aid in upgrading the Milk River weir. Other than the CDBG grant funds, the city is funding the entire project with the coal severance tax bond proceeds loan from DNRC. Havre will issue revenue bonds to meet the indebtedness. Water user rates will be increased by almost 80% (from about $15.70 per month to about $28.00 per month) to pay for the project.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. Repair work on the Milk River weir will obviously involve instream work and will result in an unavoidable, short duration increase in turbidity in the Milk River. Havre will need to acquire a "Natural Streambed and Land Preservation Act" permit from the local Conservation District, a "Short-Term Exemption to Exceed Turbidity Standards" from the WQB, and a "Section 404 Permit" from the Corps of Engineers for the instream work. The above permitting processes are structured to minimize the impacts of necessary instream construction activities.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will benefit primarily the residents of Havre. The additional water storage facilities, increased main delivery line sizes, and new fire hydrants will aid in fighting fires which will prevent death or personal injury and property damage. The improvements to the weir will improve the domestic water supply; upgrading the water treatment plant will aid in prevention of disease.

RECOMMENDATION:

The DNRC recommends a loan of $2,590,000 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon Havre passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: Hill County Water District

PROJECT/ACTIVITY NAME: Rural Water Supply Line, South Inverness

AMOUNT REQUESTED: $352,500 Grant, $1,057,500 Loan

TOTAL PROJECT COST: $1,410,000

AMOUNT RECOMMENDED: $1,410,000 loan

PROJECT DESCRIPTION:

Hill County Water District is a public entity that provides water for approximately 3,500 people along and several miles on either side of a line from Fresno Reservoir south to Fresno, then west to Joplin. The communities that are served by the District are Kremlin, Gildford, Hingham, Rudyard, Inverness and Joplin. The present water system consists of an intake structure in Fresno Reservoir, main pumping station, 60-million-gallon (MG) sedimentation reservoir at Kremlin, 500 miles of water line, 15-MG storage reservoir at Inverness, 11-MG storage reservoir at Joplin, 300,000-gallon storage tanks at Hingham and Inverness, 100,000-gallon storage tank at Joplin, several booster pump stations and numerous appurtenances. The present water system is quite extensive. In 1981, 1983 and again in 1984, the district found itself short of water in Fresno Reservoir. This year, 1984, the intake lines at Fresno Reservoir were above the water level, making it impossible to pump water to the system. In anticipation of a recurrence of this problem during the next dry year, the district has begun a search for another source of water to supplement the present source or serve as an alternate source during dry years.

The proposed project consists of design and construction of the following improvements (assuming such improvements are shown to be cost-effective by a detailed feasibility study): groundwater infiltration gallery and pumping station located along the Marias River approximately 21 miles due south of Inverness, 21 miles of 8-inch force main, booster pump station and appurtenances.

TECHNICAL FEASIBILITY ASSESSMENT:

It is technically feasible to develop an infiltration gallery in the Marias River and to pump the water some 21 miles to Inverness where it will supply the Hill County Water District. Questions remain, however, about such items as firm yield of the infiltration gallery, water quality of the proposed source, cost and affordability of the system, power supply, cost-effective alternative solutions, etc. The questions can only be answered with a detailed feasibility study. If the study shows the proposed project to be cost-effective, affordable, and feasible and the proposed project is approved by the Water Quality Bureau (WQB), then the project can be considered technically feasible and appropriate.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $1,410,000. Of this total estimated project cost, approximately $1,201,500 is the cost of construction and contingencies, and the balance is for engineering and administration. The application is for a grant of $352,500 and a loan of $1,057,500. This amount of loan/grant request places the applicant into the category that will utilize coal severance tax bond proceeds. No other funding sources are identified or needed. The Hill County Water District will issue revenue bonds to repay the indebtedness. The estimated costs appear to be realistic and will serve as budget costs. However, only after a detailed feasibility study has been conducted can an accurate cost estimate be made of the proposed project.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse environmental impacts that will result from this project are those minor, short-term effects typically associated with municipal utility projects. No stream crossing will be undertaken. Construction of the infiltration gallery and main pump station near the Marias River will be undertaken in a manner that protects the streambank area and the Marias River.

SUMMARY OF PUBLIC BENEFITS:

The project will directly benefit the present and future members of the Hill County Water District. The major benefits are prevention of disease through the development of a more protected source, the addition of domestic and agricultural water supplies and the provision of new business or employment opportunities.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a loan of $1,410,000 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district passing the necessary bond issue and completion of a comprehensive engineering study of the existing system and the proposed new water supply source. Such study will be considered complete when approved by the WQB and the proposed project is shown to be cost effective and feasible. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: Pondera County Conservation District

PROJECT/ACTIVITY NAME: Lower Birch Creek Watershed Project Rehabilitation

AMOUNT REQUESTED: $ 750,000 Loan

TOTAL PROJECT COST: $1,864,000

AMOUNT RECOMMENDED: $ 750,000 Loan

PROJECT DESCRIPTION:

An overall Watershed Development Plan has been established by agreement between the Pondera County Conservation District, Pondera County Canal and Reservoir Company (Company), and the Soil Conservation Service (SCS). The master plan includes, but is not limited to, water management, education, ditch structures, measuring devices, canal rehabilitation and reservoir upgrading. To implement the project within the scope of time, the manpower available, etc., several phases of activity have been established. This application deals with the beginning of Phase II.

Phase II specifically addresses a 202,000-acre area of the watershed of which 37,900 acres are irrigated cropland, 134,000 acres is dry cropland, 28,750 acres is rangeland and 1,350 acres is other lands. Ninety-six percent of the area is privately owned by 348 farmers and ranchers.

Of consideration in this application will be water management plans on 5,000 acres, 23 canal structures, a system management structure, and 59 turnout measuring structures.

TECHNICAL FEASIBILITY ASSESSMENT:

The SCS has determined that overall irrigation efficiency is near 22 percent and in dry years much of the area becomes short of water. Serving such a large area, an overall plan will upgrade the efficiency and conserve water much more effectively than building piecemeal projects as given needs arise. In this project engineering design, technical standards and construction approval will be done by the SCS.

FINANCIAL FEASIBILITY ASSESSMENT:

The SCS has made in-depth studies of the available alternatives and benefits and has determination that the overall annual benefit will be $909,700 from the completed phase which is significant repayment capability.

The project will be implemented through a loan agreement between the Pondera Conservation District and the Pondera Canal and Reservoir Company. The district would utilize proceeds from a Department loan to make a loan to the Company. The Company will repay the district through assessments. The current assessments of the Company are relatively low and the Company has no history of problems in collecting the assessments as it has turn-off authority. Assessments are based on 75,727 shares and are sufficient to create a reserve. Small increases generate a lot of cash.

The additional $1,114,000 needed to complete the project will be acquired through PL 566 funding.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be only minor negative impacts created during the construction process. Positive impacts are expected in increased water quality as seepage and erosion will diminish with better water control. The efficient use of water will mean fewer stagnant water areas, thus fewer mosquito breeding areas.

SUMMARY OF PUBLIC BENEFITS:

This project will have direct benefits to 348 farms and ranches with indirect benfits from conserved water, increased recreation uses, greater crop and livestock production and larger spendable incomes in a community of 3,150 people and a county of 6,900 people.

RECOMMENDATION:

The DNRC recommends a loan of $750,000 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years. Any reduction in loan request will result in a recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local assessments from the state average. Any reduction in project scope should not affect priority improvements.

The Department also recommends that the loan be conditioned on the Pondera County Conservation District and the Company providing loan security acceptable to the Department.

APPLICANT NAME: Lockwood Irrigation District

PROJECT/ACTIVITY NAME: Irrigation Supply System Renovation

AMOUNT REQUESTED: $100,000 Grant and $147,776 Loan

TOTAL PROJECT COST: $247,776

AMOUNT RECOMMENDED: $247,000 Loan

PROJECT DESCRIPTION:

The Lockwood Irrigation District supplies water via canal to 5,000 users on 2,500 acres of land. Presently five pumps supply water from the Yellowstone River to the canal through lift pipes. Four of the pumps were installed in 1935 and one in 1914; the pipe was installed in 1914. At this time the pumps are operating at 50% efficiency and the lift pipes are deteriorated to the point that a welder is required daily to repair the pipe. The project will replace the five motors and pumps with four new high efficiency units and replace the lift pipe.

TECHNICAL FEASIBILITY ASSESSMENT:

The project is needed because the system is inefficient and does not deliver adequate water. Technically, the only alternative is to replace the motors, pumps, and delivery pipe, as the water is lifted from the Yellowstone River and transported through pipe into the canal. A professional engineer will monitor the installation and design structures needed for support.

FINANCIAL FEASIBILITY ASSESSMENT:

The inefficiency of the system creates higher than normal electrical usage which, coupled with increasing rates makes a high cost operation. Savings in electricity will be $8,000, and operation and maintenance costs of $8,000 will be saved for a total cash savings of $16,000. Loan payments on the $147,776 will be approximately $17,500; the savings will almost make the payment. Because many of the water users are lot owners, rates are as high as allowable at this time, making the grant a necessity to the district. Estimated cost of the project was given by an irrigation supply company. Additional costs for any supporting structures will be paid from reserve accounts or through a special assessment.

ENVIRONMENTAL IMPACT ASSESSMENT:

No impacts will occur; the project is rehabilitation of an existing system that will require little or no earth moving and no work in the river bed.

SUMMARY OF PUBLIC BENEFITS:

There will be direct benefits from more efficient use of water and cost effective operation to the 5,000 users within the district. Indirect benefits from the greater availability of water will be provided to another 1,000 families who are residents outside the district, but in the municipal area served by Lockwood Water Users Association.

RECOMMENDATION:

The DNRC recommends a loan of $247,000 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years. Any reduction in loan request will result in a recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local acreage assessment from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: Seeley Lake Missoula County Water District

PROJECT/ACTIVITY NAME: Water Storage Tank and Water System Improvements

AMOUNT REQUESTED: $155,353 Grant and $155,353 Loan

TOTAL PROJECT COST: $310,706

AMOUNT RECOMMENDED: $310,706 Loan

PROJECT DESCRIPTION:

The Seeley Lake Missoula County Water District was formed in 1968 and operates a potable water system for the community of Seeley Lake and surrounding area. The water system currently experiences high water demand rates, low water pressure in certain areas and inadequate fire-flow capacity. The water source is Seeley Lake which is diverted without Department of Health and Environmental Sciences mandated filtration. The district is considering expansion of the system, which would require a larger water supply capability.

The district is conducting a water system facilities investigation which is to address the present and future rehabilitation and expansion needs. A preliminary report on the existing water system was included in the applicatinn. The report recommends adding storage, looping three water mains and initiating a groundwater development program for additional supply.

TECHNICAL FEASIBILITY ASSESSMENT:

The preliminary facilities plan identifies the need for increased water storage, line looping and development of additional water supplies (preferably groundwater). The application states that these items must be addressed to bring the water system up to acceptable standards for current water users and to accomodate future growth.

The looping of mains will improve line pressures and flows to the affected areas. The groundwater development program appears to be a good idea. However, there is inadequate documentation for the amount of water required. It is unclear whether the groundwater is intended to entirely replace the surface supply or to supplement it. If the surface supply is continued, then a filtration system is needed. Also, the future water expansion requirements are not addressed. Finally, the system's high demand for water is not explained. There may be a need for selected water main replacement.

Before the proposed improvements are constructed, it is recommended that the high water use rates and future expansion needs be addressed. Consideration should be given to the need for surface water filtration after the well test program is completed. Since a complete conversion to groundwater could result in high pump capacities, which would reduce storage requirements, the timing of storage development should be considered.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is $310,706 which includes: $3,500 administration, $35,400 professional/technical, $221,500 construction, $7,500 financing, and $42,806 contingency. The District has requested a $155,353 loan and a $155,353 grant. A $155,353 loan at 9% interest would increase the average water users monthly bill by $5.13 per month.

ENVIRONMENTAL IMPACT ASSESSMENT:

Construction of water lines and a storage tank will result in short-term impacts typical to municipal water system construction. There are no stream or river crossings planned. Disturbed areas will be revegetated.

There nre no anticipated long-term negative environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

The residents of Seeley Lake and surrounding area will receive primary benefits from this project. These benefits include: improving domestic water supply and prevention of property damage.

RECOMMENDATION:

DNRC recommends a loan of $310,706 from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be three percentage points below the rate at which the state bond is sold for the first seven years and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements. Use of the loan proceeds is contingent on completion of a long-range water facilities improvement and expansion plan to assure that critical items are addressed first and are compatible with future expansion. The district must also pass the necessary bond in an election.

APPLICANT NAME: Tiber County Water District

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $279,630 grant, $279,630 loan

TOTAL PROJECT COST: $559,260

AMOUNT RECOMMENDED: $559,260 loan

PROJECT DESCRIPTION:

Tiber County Water District serves 319 farmsteads in a five-county area located east of Conrad. The district was formed in 1973 to provide water to a rural area that has very poor quality ground and surface water resources. Before the district was formed, area residents were hauling as many as 230 truckloads of water per day from Conrad. Upon formation, the district acquired the abandoned U.S. Air Force water system developed in the area to accommodate construction of the A.B.M. system. At the time of acquisition of the U.S. Air Force water system, the district received funding to improve and expand the system to its present size. At present the water system consists of a Tiber Reservoir intake/pump structure, 9-million-gallon (MG) holding reservoir, water treatment plant, seven pump stations, a 500,000-gallon, 100,000-gallon, 400,000-gallon, and several smaller water storage reservoirs, 2-1/2 miles of 10-inch steel water line, 26 miles of 8-inch steel water line and 380 miles of 6-inch, 4-inch, 3-inch and smaller distribution lines. The major problems with the water system are inadequate chlorine residual levels near the end of the lines, inadequate control system, inadequate filtration for removal of giardia cysts, and excessive wasting of water (by both inefficient backwashing techniques and overflowing storage tanks).

The proposed project consists of design and construction of the following improvements: construction of three gas chlorine booster stations; installation of monitoring and telemetry equipment to control distribution system pumps, storage tank water levels and operation of the water treatment plant; and installation of three pressure clarifiers ahead of the existing filters in the water treatment plant. With completion of the proposed improvements the Tiber County Water District will have the treatment and delivery capacity to provide water to its present users plus 30 new rural users and the Town of Dutton. Dutton is in need of a new domestic water source.

TECHNICAL FEASIBILITY ASSESSMENT:

A preliminary engineering study of the district's water system evaluated the existing system in light of present and anticipated future demands and the ability of the present system to efficiently meet those demands. Deficiencies were addressed and cost effective alternatives were considered for correcting the deficiencies. The proposed upgrading project will allow the present treatment facilities to efficiently operate at design capacity and produce water of an acceptable quality. The proposed project appears to be appropriate and technically feasible. It should produce the desired effects.

All proposed improvements will be reviewed and approved by the Water Quality Bureau (WQB) prior to commencement of construction. The WQB supports the project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $559,260 of which $449,525 is the cost of construction and contingencies and the balance is for engineering, administration and financing. The application is for a grant of $279,630 and a loan of $279,630. No other funding source is identified or needed. The amount of loan/grant request places the applicant into the category that will utilize coal severance tax bond proceeds. The Tiber County Water District will issue revenue bonds to repay the loan.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects.

SUMMARY OF PUBLIC BENEFITS:

The users of the Tiber County Water District and the residents of Dutton will directly benefit from the project. The major benefits include prevention of disease (improved filtration will remove giardia cysts and other filterable organisms, and the additional chlorination will improve disinfection effectiveness) improve water quality, improving domestic water supply (adding and improving the water supply for Dutton), improving the availability of the resource (improve efficiency and transmit more water to the west end of the district for use by Dutton), improving agricultural water supply and providing new business opportunities. A readily available, high quality source of domestic water in an area improves the business climate.

RECOMMENDATION:

The DNRC recommends a loan of $559,260 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon the district passing the necessary bond issue. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in scope should not affect priority improvements.

APPLICANT NAME: Town of Whitehall

PROJECT/ACTIVITY NAME: Wastewater Treatment Facility

AMOUNT REQUESTED: $300,400 Loan

TOTAL PROJECT COST: $736,570

AMOUNT RECOMMENDED: $300,400 Loan

PROJECT DESCRIPTION:

Whitehall, population approximately 1,030 people, has been ordered by the Montana Department of Health and Environmental Sciences to upgrade its present wastewater treatment facilities. At present, the town has a two-cell, series-operated conventional lagoon system that discharges to Big Pipestone Creek, a tributary to the Jefferson River. The facilities are incapable of meeting the effluent limitations (national secondary treatment standards) imposed by the town's waste discharge permit, and the discharge is degrading the water quality of Big Pipestone Creek and the Jefferson River. Whitehall must upgrade its present wastewater treatment facilities to either eliminate the effluent discharge or upgrade to produce an effluent that meets the national secondary treatment standards.

The proposed project consists of design and construction of the following system improvements: construct two new primary treatment cells 7.6 acres and 10.8 acres in size; raise the dikes of the two existing cells (to increase the water depth to eight feet in each) and convert the two cells into secondary treatment/winter storage cells; and construct a main sewage lift station, bypass piping, drains, hydraulic structures and other pond appurtences.

TECHNICAL FEASIBILITY ASSESSMENT:

An EPA-funded facilities plan for Whitehall was prepared in 1978. The facilities plan was updated in 1981 and again in 1983. Wastewater treatment alternatives, special problems, costs, financing options and numerous other items were addressed in the rather extensive facilities plan. The facilities plan, which is essentially a very comprehensive preliminary engineering study, was approved by the Water Quality Bureau (WQB) and meets EPA requirements. The proposed method of solving Whitehall's wastewater treatment problems appears appropriate and technically feasible. It is also the most cost-effective solution. The final design will have to meet "Ten States Standards" and be reviewed and approved by the WQB prior to commencement of construction.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is estimated at $736,570 of which $609,470 are costs of construction and contingencies and the balance is engineering, administration and interest. The application is for a loan of $300,400. Whitehall will receive an EPA grant for the project of approximately $436,170. The remaining local share (amount of loan requested from DNRC) will be financed by a revenue bond. The amount of the loan requested places the applicant into the category that will utilize coal severance tax bond proceeds. The estimated project costs appear to be realistic and reasonable and it appears as though the most cost-effective alternatives were chosen. The town's sewer rates will have to be increased to meet the bonded indebtedness. Whitehall can issue G.O., Revenue or SID bonds. Since the upgrading project is mandated by the State, the rates proposed by the town do not require PSC approval.

ENVIRONMENTAL IMPACT ASSESSMENT:

The only adverse impacts that will result from this project are those minor, short-term effects typically associated with construction projects. A "Finding Of No Significant Impact" has been issued on the project by the EPA. Correcting the inadequate discharge to Big Pipestone Creek will have a positive impact on the environment.

SUMMARY OF PUBLIC BENEFITS:

The project will benefit primarily the residents of Whitehall and downstream users of the Pipestone Creek and the Jefferson River. However, because a source of pollution of the Jefferson River will be eliminated, essentially the State of Montana, fish and wildlife and all recreational visitors to the Jefferson River area below Whitehall will benefit from the project. The major benefits of this project are prevention of disease, improvement of water quality and minimization of impacts on downstream fish and wildlife. The resultant improvement in water quality may well provide new business or employment opportunities and improve recreation opportunities.

RECOMMENDATION:

The Department of Natural Resources and Conservation recommends a loan of $300,400 at an interest rate of two percentage points below the rate at which the state bond is sold for the first seven years, and at the coal severance tax bond rate for the remaining 13 years, contingent upon Whitehall securing the necessary EPA grant and passing the necessary bond issue. Any reduction in loan request will result in a recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

APPLICANT NAME: City of White Sulphur Springs

PROJECT/ACTIVITY NAME: Water System Improvements

AMOUNT REQUESTED: $ 639,150

TOTAL PROJECT COST: $1,202,150

AMOUNT RECOMMENDED: $ 639,150 loan

PROJECT DESCRIPTION:

The City of White Sulphur Springs has approximately 525 water users and relies on surface water from a diversion on Willow Creek for its sole source of municipal water. Water is diverted from a dam on Willow Creek and transported by a three-mile gravity pipeline to chorination and storage facilities. It is then piped approximately two more miles by gravity to the city's distribution system.

The water source is not adequately treated to meet current potable water standards. The supply is periodically plagued with high turbidity and has been suspected as the cause of an intestinal disease outbreak in 1977. The Willow Creek supply is also incapable of providing adequate quantities of water during critical periods and is limited by the city's water rights. The city has also indicated transmission pipeline facilities and deteriorated water mains have caused system operation problems.

White Sulphur Springs has requested grant funds to investigate secondary water sources, to study distribution system, supply line and storage deficiencies, to construct a new municipal production well and related transmission facilities, and to construct improvements to the distribution system.

TECHNICAL FEASIBILITY ASSESSMENT:

The city has established quantity and quality problems with their Willow Creek source. There is no present secondary supply in case of emergency and there does not appear to be any expansion capability of the existing source. There is a need to address the problems related to the existing supply and to develop a new water source. However, the location, extent, and priority of needed improvements have not been identified.

The immediate need for substantial water main replacement in the distribution system is not completely supported. Problems with old, deteriorated and undersized water mains undoubtedly exist. However, the priority and immediate need of 35,900 feet of pipe replacement is uncertain.

The proposed project addresses major problem categories of the White Sulphur water system and should solve many of the problems. The result of completing the project should include a complete, modern municipal system. Costs associated with such a complete renovation will be high and may warrant investigation of a prioritized long-term improvement plan.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is estimated at $1,202,150. The city has requested a grant of $639,150 from the Water Development Program. The remaining $543,000 would come from a Community Development Block Grant program application which the city plans to submit. The amount of the request places the applicant under the coal severance tax bond loan authority. The city has indicated they would consider a $300,000 loan if the $639,150 grant request is reduced.

ENVIRONMENTAL IMPACT ASSESSMENT:

Project construction impacts should be of short duration and limited to typical water well and ditch construction effects. Final impact assessment and permit requirements should be determined during the project design phase.

Completion of the project should reduce the impacts associated with frequent water shortages and improve the social aspects of the community.

SUMMARY OF PUBLIC BENEFITS:

The proposed project will primarily benefit the residents of White Sulphur Springs. Major benefits include prevention of disease, improved water quality and addition of water supply to the community. Other benefits include improved fire protection and decreased repair costs.

RECOMMENDATION:

DNRC recommends a $639,150 loan from the sale of coal severance tax bonds to be repaid over a maximum of 20 years. The interest rate shall be two percentage points below the rate at which the state bond is sold for the first seven years, and the coal severance tax bond rate for the remaining 13 years. Any reduction in the loan request will result in recalculation of the loan interest rate. This rate will be based on the resulting deviation of the local utility fees from the state average. Any reduction in project scope should not affect priority improvements.

Group D

APPLICANT NAME: Montana Department of Natural Resources and Conservation

PROJECT NAME/ACTIVITY: Middle Creek (Hyalite) Dam Rehabilitation

AMOUNT REQUESTED: $3,500,000

TOTAL PROJECT COST: $3,500,000

AMOUNT RECOMMENDED: $3,500,000 loan

PROJECT DESCRIPTION:

Middle Creek (Hyalite) Dam and Reservoir is located about 15 miles south of Bozeman in Gallatin County. The project is owned by the Montana Department of Natural Resources and Conservation (DNRC) and is operated by the Middle Creek Water Users Association. The Department has a special use permit from the Forest Service.

The project provides 7,780 acre-feet of storage water. The dam was built in 1952 to supply water for irrigation. Water is also sold to the City of Bozeman for municipal use and the reservoir is a popular recreation area. The dam consists of a 106-foot high earth embankment, with a 1,300-foot crest length and a 40-foot top width. A 10-foot spillway is located in the right abutment.

In 1980, the U.S. Army Corps of Engineers completed a Phase I dam safety inspection at Middle Creek Dam and identified several deficiencies with the dam. The dam was found to be overtopped during a probable maximum flood (PMF) and could only route 29 percent of the flood volume of the PMF. The existing spillway was reported to be in a deteriorating condition and the left abutment had a high rate of water seepage. The inspection report made recommendations for additional hydrologic and hydraulic studies, completion of a stability analysis and monitoring of the seepage.

Based on the Army Corps of Engineers recommendations in 1983, the DNRC selected an engineering firm to complete a feasibility study of measures to bring the dam into compliance with current dam safety standards. The study would complete the recommended studies made in the Corps of Engineers inspection report and make recommendations for repairs.

The recommended repairs from the preliminary study results are to raise the dam, rehabilitate the existing spillway, construct a new auxiliary spillway in the left abutment, provide a new spillway channel and drop structure from the existing spillway to Middle Creek, replace an existing campground and install additional seepage and drainage control. Funding for the project may come from several sources, but will be repaid through additional water sales and increased costs of the existing water.

TECHNICAL FEASIBILITY ASSESSMENT

Middle Creek Dam has been classified as a facility with a high hazard potential that requires corrective measures. The engineering contractor will be completing the feasibility study in December 1984. The study methods, procedures, and recommendations are being reviewed by the Middle Creek Water Users Association, City of Bozeman, Bureau of Reclamation, U.S. Forest Service and DNRC. Several alternatives are being considered, and a preferred alternative will be recommended in the final report. The preferred alternative appears to be to raise the dam about ten feet using a reinforced earth cap, rehabilitate the existing spillway structure, build a new auxiliary spillway in the left abutment, provide additional seepage and drainage control in the abutments, repair the impervious blanket on the reservoir side of the left abutment where sink holes were located, build a new campground to replace the existing campground that will be destroyed when the emergency spillway is built, build a dike downstream of the existing spillway and channel the water through a concrete baffle apron drop to Middle Creek. Dikes must also be built downstream of the left abutment to channel water flowing through the auxiliary spillway away from the dam embankment.

FINANCIAL FEASIBILITY ASSESSMENT:

The department is requesting a 100 percent loan for this project. The loan would be expected to be repaid over a 20-year period. The major categories in which the money will be spent will be the principal spillway, the auxiliary spillway, raising the dam, building an access road and campground, providing seepage and drainage control, and environmental mitigation. Several things could affect the ultimate cost of the project: 1) the amount of inflation from the time the project is approved until it is constructed; 2) the amount of environmental work that will need to be done; 3) the interest that will have to be paid on any money that is borrowed; 4) the amount of time necessary to obtain the necessary permits, special use permits and land rights; and 5) the short construction season.

The requested money is the least cost alternative that could reasonably bring the dam into compliance with current dam safety standards. The final report has not been completed but to our knowledge all costs have been anticipated and the estimated costs are reasonable. The costs are based on current bid prices for similar projects. The loan is expected to be repaid through charges for the contracted water and the sale of an additional 2,000 acre-feet when the dam is raised. The water charges for irrigation are currently $1.96 for the principal, and the cost of the agricultural water once the repairs are completed would be about five dollars per acre-foot, which would include operation and maintenance. The charge per acre-foot for municipal water sold to the City of Bozeman would be about $50 per acre-foot.

Farm budget analyses indicate that five dollars per acre-foot is about the maximum agricultural payment capacity. Alternative sources of water for the City of Bozeman were investigated to determine what the city may be willing to pay for additional supply. All alternatives cost much more than the estimated cost of water from Middle Creek Dam.

A total income from the water sales of about $100,000 per year would be available to repay the loan. The cost could be repaid totally by the sale of the stored water. The reservoir is a highly used recreation area, and this is a benefit that is not contributing to the repayment of the project.

Another source of funding the Department is considering is a U.S. Bureau of Reclamation small projects loan. Obtaining a small projects loan would depend on meeting the criteria required by the loan application guidelines. The small projects loan requires municipal and industrial water to pay interest, while the agricultural water pays no interest. Other sources of funding may be the Farmers Home Administration and federal or state grants.

ENVIRONMENTAL IMPACT ASSESSMENT

Several negative environmental impacts will result from this project. These impacts include removal of some riparian vegetation and trees in the areas where the auxiliary spillway, principal spillway and channel spillway will be located. Other negative impacts will result from the removal of the Blackmore campground and the construction of a new campground in the left abutment area. The moose habitat on the upper end of the reservoir will be adversely affected. Approximately 800 feet of fish spawning beds in the West Fork of Middle Creek where it enters the reservoir will be affected by raising the reservoir. There are some impacts on the Hood Creek campground on the east side of the lake and possibly some impacts to the private property on the upper end of the reservoir. There will be some aesthetic impacts if the dam is raised.

Positive impacts include reduction in the potential for failure of the dam embankment. Should the dam fail, the canyon from the dam to the canyon mouth would be severely flooded. Construction measures are planned to eliminate the severe erosion and degradation that is occurring in the present channel below the principal spillway. Recreational facilities impacted by construction will be restored or replaced where possible.

SUMMARY OF PUBLIC BENEFITS:

Repairing the dam will insure provision of water-based recreation, irrigation water, municipal water and industrial water for the Bozeman area. The repairs will insure the safety of the dam and reduce the possibility of dam failure resulting in possible loss of life, property damage, and loss of an important water source.

RECOMMENDATION:

The DNRC recommends a loan of $3,500,000 from coal severance tax bond proceeds to be repaid over a maximum of 20 years. The interest rate shall equal the coal severance bond rate for the term of the loan.

APPLICANT NAME: Milk River Irrigation Districts

PROJECT/ACTIVITY NAME: Tiber Dam Power Project

AMOUNT REQUESTED: $17,869,000 Loan

TOTAL PROJECT COST: $17,869,000

AMOUNT RECOMMENDED: $17,869,000 Loan

PROJECT DESCRIPTION:

Tiber Dam is an earth-filled structure across the Marias River 4,526 feet long with a top elevation of 3,026 feet mean sea level. The reservoir area is Lake Elwell with a maximum capacity at 3,012.5 feet MSL of 1,368,158 acre-feet of water. The dam and lake are owned by the United States Government and managed by the Bureau of Reclamation. Adequate water is impounded and released to create strong interest in hydropower development. A detailed study was authorized by the Milk River Irrigation Districts for determining the feasibility and prime alternative to hydropower development at the dam and that report was made into an application for licensing to the Federal Energy Regulatory Commission (FERC). The project will be operated as a run-of-the-river power plant utilizing water that is released from the dam for other purposes. The proposed facility will have an installed capacity of 12 megawatts and generate at an anticipated 71% efficiency 75,020,000 kWh's per year.

The powerhouse will be located within the existing stilling basin of the auxiliary outlet works. Water will be conveyed downstream from the existing auxiliary outlet high-pressure gate through a pressurized steel line installed within the auxiliary outlet works conduit to two Francis turbines. Approximately .7 mile of new transmission line will be required to connect the plant with existing power transmission lines.

TECHNICAL FEASIBILITY ASSESSMENT:

The Federal Energy Regulatory Commission (FERC) has on file and in review status two other license applications for Tiber Dam; one from the Town of Chester, Montana and one from the Town of Gillette, Wyoming. The technical study for this application was made by a recognized and reputable firm in the field of hydropower. The technical feasibility was determined by the average available water release, the average available operation head, the availability of an adequately controlled delivery system to the turbine and the sizing of generators and turbines to maximize the efficiency of the overall project.

FINANCIAL FEASIBILITY ASSESSMENT:

The cost of the project is estimated at $17,869,000 (including contingencies). This fits within the "rule of thumb" range for hydropower development of $1,200 to $2,000 per kW, being $1,489 per kW. Establishing a 66% efficiency rather than the 71% expected, gross output will be 69,000,000 kWh's per year; which at today's levelized rate of 6.5 cents per kWh yields a return of $4,485,000 annually. Gross operational expenses and loan repayment are estimated at $2,000,000. This indicates a probable strong positive cash flow. The operational breakeven point is at 30% efficiency.

Profits from the project will be used by the Milk River Irrigation Districts to increase their irrigation water supply in a historical area of water shortages, bring about water management projects, and pay operation and maintenance costs throughout the districts.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be almost no negative impacts created by the project, even in the construction stage, since construction will occur in controlled areas. Released water temperatures have been studied in order to maintain existing ranges for the benefit of a diversified fish habitat. Continued monitoring will take place to blend waters when necessary to control the water temperature. A positive benefit to the environment can be related to the coal (a nonrenewable resource) required to produce the equivalent electricity in the amount of 32,000 tons per year; thus potential air pollution and water cooling problems are avoided.

SUMMARY OF PUBLIC BENEFITS:

The 670 family farm participants in the Milk River Irrigation Districts will receive direct monetary benefits from the implementation of this project. As profits are derived, improved water management and increased water quantity will have direct benefits to the 670 farm families who operate 100,000 acres of irrigated land, and 16,000 people who receive municipal water from the districts in the towns of Chinook, Harlem, Havre, Fort Belknap and Saco, and through the Hi-Line Water Users Association. The electricity produced will on the average be adequate to furnish 7,000 households using a renewable resource.

During construction, approximately 50% of the project costs will be funneled into the economy.

RECOMMENDATION:

The DNRC recommends a loan of $17,869,000 for the same term and at the same interest rate as the state Coal Severance Tax Bond, contingent upon the applicant receiving the necessary FERC license and a signed power purchase agreement for purchase of all produced power.

Chapter III

State-owned Water Project Rehabilitation

The State of Montana owns 25 water storage projects. The largest of these are on the Tongue River in Big Horn County and Deadman's Basin in Golden Valley and Wheatland counties. These two projects have a combined storage capacity of almost 142,000 acre-feet. All are rock or earth-filled structures which store water primarily for irrigation. Secondary benefits include recreation, flood control and sediment accumulation. Some projects include spillways, outlet works, and drain systems that are in deteriorating condition. Long-term remedies for particular site problems have varied according to dam condition.

In addition to ongoing long-term rehabilitation efforts, dam safety inspections have been made at all state-owned water projects since July 1981. All are inspected annually. As a result of these annual dam safety inspections, maintenance and minor repair needs are discovered and plans are made to complete the necessary repairs. Most minor repair work is completed by the water users, but the Department will provide technical and field assistance.

Finally, the Montana Codes mandate that the Department investigate the feasibility of developing hydropower at all state-owned projects. Where this kind of development is found feasible, DNRC shall attempt to lease the site to public utilities or electric cooperatives. If this is not possible, the state is authorized to operate feasible projects. The ultimate goal of hydropower development is to generate revenue to be cycled back into rehabilitation efforts. The Department is currently pursuing hydropower development at eight sites.

A. Dam Safety and Feasibility Studies

This section summarizes repair to those dams that are inspected under the dam safety program. Feasibility studies are also included.

Bair Dam (Meagher County)

Structural Repair. In October of 1983 the Department and members of the Upper Musselshell Water Users Association repaired holes in the spillway floor at Bair Dam. Repair work consisted of removing deteriorating concrete in the floor of the spillway in 15 different locations. The Association provided the materials, equipment and labor, and the Department provided some of the labor.

The spillway at Bair Dam is undersized and the dam was declared unsafe (March 1981 inspection report) according to the U.S. Army Corps of Engineers guidelines. DNRC plans to begin a study by the spring of 1986 to examine ways to solve the safety problems at the dam. The estimated cost for this study is $225,000.

Broadwater-Missouri (Toston) (Broadwater County)

Structural Repairs. An Emergency Preparedness Plan for Broadwater-Missouri is being completed. The plan will outline the responsibilities of the dam tender and DNRC during a dam emergency. Flood inundation maps are being prepared for the area immediately downstream. The plan will be reviewed by other government agencies and the water users association.

Cooney Dam (Carbon County)

Structural Repair. Large holes downstream of the gate caused by cavitation have been reported since 1982 and each year the water users have tried to repair the holes with epoxy.

An Emergency Preparedness Plan for Cooney Dam was completed in the fall of 1984. The plan outlines the responsibilities of the dam tender and DNRC during a dam emergency. The plan also contains flood inundation maps of areas downstream that would be flooded if the dam failed.

Cottonwood Dam (Park County)

Large voids and excessive seepage under the spillway slab were discovered during a May 1982 dam safety inspection. An engineering firm was contracted to make recommendations for repair.

The preferred repair alternative is to replace part of the spillway floor slab and extend the stilling basin walls at an estimated cost of $218,000. The Department will attempt to secure the necessary funding from the next legislature to complete the repairs.

Deadman's Basin Dam (Golden Valley/Wheatland Counties)

Structural Repair. The October 1983 inspection revealed a large cavitation hole at the outlet portal of the dam. The hole was repaired in November 1983 by members of the Water Users Association and the Department. The Association provided some of the labor, equipment and materials, and the Department provided labor, repair guidance and equipment to pump out the stilling basin. The deteriorating concrete was removed and replaced.

Martinsdale Dam (Wheatland/Meagher Counties)

The Seepage Monitoring Program and Stability Analysis study completed in 1982 made recommendations for repair of the dam. The recommendations were to drill horizontal drain wells in both abutments of the north dam, construct a drainage collection system, repair a crack in the outlet tunnel, replace a portion of the spillway side wall, and do additional hydraulic analysis of the spillway.

The Department sold bonds in the summer of 1984 to finance the repairs. The Upper Musselshell Water Users have contracted with the Department to repay the cost of the repairs. An engineering consultant firm was selected to design the repairs and provide construction management services. The repair work will be completed in the fall of 1985.

Middle Creek (Hyalite) Dam (Gallatin County)

Structural Repair. The inspection report by the U.S. Army Corps of Engineers in September 1981 found several deficiencies with Middle Creek Dam. The main deficiency was inadequate spillway capacity. The dam cannot route a probable maximum flood without being overtopped, which would result in failure. The inspection report also identified other deficiencies with the dam. DNRC selected an engineering consultant to conduct a rehabilitation feasibility study to bring the dam up to current dam safety standards.

A detailed hydrologic analysis was performed to determine the probable maximum precipitation and subsequent flood, conduct a detailed geotechnical investigation, route the computed floods, perform a dam breach analysis, perform an economic analysis of the project, develop a financial plan, develop alternatives for repair and rehabilitation, and present these in a report to DNRC. The study started in the summer of 1983.

Using the information obtained from the flood hydrology and geotechnical investigation, several alternatives for repairing and rehabilitating the dam were presented. Some of these alternatives were: 1) raising the dam, 2) leaving the dam at its present elevation, 3) adding additional spillway capacity at the present spillway location, 4) replacing the existing spillway and adding an auxillary spillway at another location, 5) repairing the existing spillway with additional spillway capacity at another location, 6) modifying the outlet controls, 7) repairing the eroded area below the existing spillway, and 8) channeling the water flowing over the existing spillway into Middle Creek at a different location from its present location.

The preferred alternative for rehabilitating Middle Creek Dam is to raise the dam crest and reservoir level by 10 feet using the reinforced earth, rebuild the existing spillway structure and install a baffled apron drop to channel the water to Hyalite Creek, and construct a new emergency spillway in the left abutment.

The proposed method of financing the project would be to secure a U.S. Bureau of Reclamation Small Projects Loan and a grant. The estimated total project cost is about $4 million. An environmental assessment was also completed as a part of this study.

Nevada Creek Dam (Powell County)

The spillway is seriously inadequate according to U.S. Army Corps of Engineer guidelines and will probably need major modifications. The Corps declared the dam unsafe. DNRC plans to begin a study by the fall of 1985 to examine ways to solve the safety problems at the dam. The estimated cost is $225,000.

The Department provided assistance to the water users to perform cavitation damage repairs to the outlet tunnel in the spring of 1984.

North Fork of the Smith River (Meagher County)

Structural Repair. An inspection in April 1982 showed that the operating gate pedestal had separated from the concrete tower floor. A bent control rod caused the problem and made operating the gate almost impossible. The Department designed repairs, and supervised the repair work during the spring of 1983. The cost of repairs was about $10,000. The repair work was paid for by the water users from the operation and maintenance fund for the project. The gate has been operating satisfactorily since being repaired.

The U.S. Army Corps of Engineers inspection report of May 1981 stated the spillway is seriously inadequate according to Corps guidelines and declared the project unsafe. DNRC plans to begin a study by the fall of 1985 to examine ways to solve the safety problems at the dam. The estimated cost is $225,000.

Painted Rocks Dam (Ravalli County)

Structural Repair. During a September 1981 inspection it was found that the gates would not seal under a full reservoir head. Subsequently, the reservoir was drained so the outlet tunnel could be inspected. During this inspection Department personnel decided to remove the gates, replace the cables and refurbish the gates to the extent possible. Cost for this work was about $5,000.

A previous U.S. Army Corps of Engineers inspection report of September 1980 stated that the spillway was inadequate to handle the design flood for the project and recommended further studies. DNRC plans to begin the recommended studies by the summer of 1985; the estimated cost of the study is $350,000.

A revised Emergency Preparedness Plan for Painted Rocks Dam was completed in January 1984. The plan outlines responsibilities of the dam tender and DNRC during a dam emergency. The plan also contains flood inundation maps of the downstream area that would be flooded if the dam failed.

A dam tender class was held to instruct potential Painted Rocks dam operators what to do during an emergency, how to operate the gates, and how to use the emergency plan. A public meeting was also held informing the general public that the plan had been completed.

The Emergency Preparedness Plan was tested in the summer of 1984 and gate operating instructions have been placed in the gatehouse. A list of emergency telephone numbers has been placed at the dam.

Petrolia Dam (Petroleum County)

The December 1980 U.S. Army Corps of Engineers inspection report noted that the spillway is seriously inadequate according to Corps guidelines and declared the dam unsafe. Voids were discovered under the spillway slab and a large number of seepage areas were found downstream from the dam. In October 1982 an engineering firm was contracted to conduct a seepage study and preliminary stability analysis, and to determine the cause of the voids under the spillway floor. Cost of this study was $33,727. Findings were:

1) The preliminary stability analysis showed that the embankment is unsafe.

2) Seepage is exiting through both abutments and through the left abutment contact in the embankment.

3) The voids under the spillway appear to be caused by poor drainage.

An engineering feasibility study was started in July 1984 to look at the dam safety concerns identified in the Corps of Engineers 1980 inspection and the engineering study of 1982. The current study will look at the watershed and flood hydrology, hydraulic capacity of all the structures, stability of the dam embankment and spillway, seepage, water supply, farm economics, repair alternatives and project financing. The study is to be completed by January 1986 at a cost of $225,000.

The October 1983 dam safety inspection found a large void under the spillway; it was filled in by the water users in November 1983.

Ruby Dam (Madison County)

The U.S. Army Corps of Engineers report of August 1980 indicated that the spillway is seriously inadequate according to Corps guidelines and declared the dam unsafe. DNRC plans to begin a study by the summer of 1985 to examine ways to solve the safety problems at the dam. The estimated cost is $300,000.

A revised Emergency Preparedness Plan for Ruby Dam will be completed early in 1985. Flood inundation maps are being prepared which will be included in the revised plan. The plan outlines responsibilities of the dam tender and DNRC during a dam emergency. The plan will be reviewed by other governmental agencies and the water users association.

Stafford Dam (Fergus County)

Structural Repair. Past safety inspections have found that the dam is in very poor condition. The embankment slopes appear too steep, the outlet conduit is deteriorating, and the spillway is severely eroded. The Department is investigating the possibility of deactivating this project.

Yellow Water Dam (Petroleum County)

Structural Repair. The outlet conduit is a corrugated metal pipe which is in very poor condition. The U.S. Army Corps of Engineers report of October 1980 commented about the deteriorating condition of the conduit. In October 1982, an engineering firm was contracted to evaluate the condition of the conduit. Their findings were that the conduit should be replaced immediately. The repair alternative would be to line the conduit with a high-density polyethylene pipe grouted in place. The estimated repair cost is $113,000.

B. Hydropower Projects

Broadwater Power Project

In May 1982 DNRC applied to the Federal Energy Regulatory Commission (FERC) for a license to develop the Broadwater Power Project. The license was issued on April 23, 1984. An update of the project feasibility in July concluded it was still feasible. The Board of Natural Resources and Conservation then issued a request for proposal for lease of the hydropower development rights at the project on August 1, 1984. Proposals are to be submitted by December 14, 1984. The lease process will take a total of 9 months to complete. Design will take an additional 14 months followed by 2 years of construction.

Cooney Hydroelectric Project

DNRC applied for a FERC exemption from licensing in October 1983. Feasibility studies conducted in 1983 concluded that a 1,000 kW project is feasible and capable of producing 4,110,000 kilowatt hours per year. The exemption was issued on April 5, 1984. An update of the feasibility study using the current avoided cost showed the project not profitable now. Consequently no request for lease proposals has been issued.

Deadman's Basin Dam

DNRC received a FERC preliminary permit for the project in March 1983. The Department conducted feasibility and environmental studies and filed a FERC license application for the project in September 1984.

Painted Rocks Hydroelectric Project

A Federal Energy Regulatory Commission exemption for the project was issued on July 6, 1982. A request for proposals for lease of the development rights was developed and then issued in November 1983. No lease proposals were received and the Department has begun investigating Department development of the project and sale of the power. The exemption requires construction to begin by July 1985.

C. Tongue River Project

In 1978, the Tongue River flooded, causing $1 million damage to the Tongue River Dam spillway. The study by the Corps of Engineers concluded that the spillway was inadequately designed to pass the probable maximum flood (PMF). As a result, the legislature directed DNRC to propose a solution to the dam safety problem.

Subsequent studies by DNRC with the assistance of the U.S. Bureau of Reclamation have focused on the now preferred alternative of rehabilitating the existing Tongue River Dam and spillway to route the PMF with a raised spillway crest of four feet. As part of their feasibility study, the Bureau of Reclamation investigated possible impacts on the coal mines adjacent to the southern end of the reservoir. Under the present project's spillway crest elevation of 3,424.4 feet, the mines would be exposed to some risk of flooding. The Bureau of Reclamation findings indicated that the crest elevation for an overflow spillway should not exceed 3,428.4 feet. A 14-foot rise (DNRC's preferred option) would cause flooding that would be expensive to mitigate; therefore, the 4-foot rise was selected for further study.

DNRC has contracted for preliminary design and cost estimates on the preferred option, based on increasing the width of the existing spillway (currently 350 feet) to 500 feet and installing one additional outlet works capable of discharging 4,000 to 5,000 cfs. The present outlet tunnel has a maximum capacity of about 4,000 cfs. The additional outlet will enable the project to discharge flood water which previously was backed up in the reservoir. This backup inundated more land and increased pressure on the spillway.

The most reasonable way to enlarge the project is to raise the existing spillway crest by four feet. This rise in normal operating pool elevation, together with an increase in outlet tunnel capacity, rehabilitation, and widening of the spillway will increase the firm annual yield (FAY) to 57,500 ac.ft. The present FAY, under conservative operation, is less than 52,000 ac.ft, just enough to meet all of the present demands, although shortages would occur in very dry years.

In support of these findings, DNRC and the Bureau of Reclamation have concentrated their energies for the past 26 months on completing the following studies:

	Status
A. Feasibility Study	
1. Hydrology	
a. Water Supply Analysis	Completed
b. Design Storm (PMF)	Completed
c. Inflow Design	Completed
d. Tailwater	Completed
e. Sedimentation	Reviewed
2. Soils	
a. Classification	Completed
b. Drainage-permeability	Completed
c. Field Testing	Partial
3. Geology & Engineering	
a. Geotechnical	Completed
b. Design	Completed
c. Field Surveys	Completed
d. OM&R	Completed
e. Cost Estimates	Completed
4. Economics	
a. Farm Budget	Completed
b. Social Assessment	Completed
c. Economic Analysis	Completed
B. Environmental Assessment	
1. Archaeological Study	Completed
2. Scoping Session	Completed
3. Endangered Species	Completed
4. Participant Review	Complete by Jan. 85
5. Coordination Act Report	Completed

DNRC will have all the necessary data available to compile a summary report to the 1985 Legislature, based on the four-foot rise.

The Northern Cheyenne Tribe has not contributed financially to these studies. Recent contact with the Bureau of Indian Affairs (BIA) in Billings indicates that future funding for studies is not available. However, monies for the construction of a rehabilitation project could become available if a joint state-federal-tribal project is built.

The funding would be based on a negotiated settlement with the Northern Cheyenne Tribe regarding the extent of the tribal reserved water right. The last meeting of the Reserved Water Rights Compact Commission (RWRCC) and the tribe to discuss tribal reserved rights was on March 17, 1982. Further meetings were suspended by the Tribe. Recently, informal meetings have been held and correspondence by both sides has indicated an interest in reopening negotiations. If progress can be made toward a settlement, chances for funding would increase.

Reconnaissance-level studies by DNRC indicated that a hydroelectric power project at the dam was marginally feasible under the old project. Studies based on DNRC's new proposed alternative have not been undertaken.

So far, all indications except one point favorably to a four-foot rise designed to pass a PMF. The one negative aspect is that the project has a benefit-to-cost ratio less than one. This option, however, is the most cost-effective of the eleven options that were analyzed in the Financial and Economic Feasibility Study of January 1, 1984. Also, it is the most cost-effective according to construction estimates completed in August, 1984 by a private firm. The construction cost estimates for the alternatives studied since 1982 are outlined below.

Alternative	Design Capacity (CFS)	Outlet Tunnel Capacity (CFS)	Spillway Crest El.	Maximum Spillway Width	Construction Cost (Millions)
1. 4' Rise	PMF*	8,000	3,928.4'	500'	$114.6
2. No Rise	PMF	4,000	3,924.4'	350'	$111.4
3. No Rise	PMF	8,000	3,924.4'	500'	$113.1
4. No Rise	103,400	4,000	3,924.4'	350'	$ 24.7

*PMF = 382,000 cfs

DNRC predicts all preliminary work necessary before design can begin will be finished by April 1, 1985, with two exceptions: the negotiated settlement of the water rights with the Northern Cheyenne Tribe and the receipt of funding. If this is not accomplished, the legislature can still authorize funding the project dependent upon a settlement.

An update of the Emergency Warning and Evacuation Plan is being finalized. Radio warning equipment is being purchased by DNRC. We plan to have the warning system operational and tested by February 1985, with a second test scheduled for early April before spring runoff. A 5'x5' building and a power pole have already been installed on Pyramid Butte, near Birney, Montana to house and provide power to the main radio relay station. Each resident between the dam and Birney and DNRC personnel will have radios to provide early warning.

DNRC will continue to operate the reservoir at a conservative level until the unsafe condition is corrected.

Chapter IV

Yellowstone Basin Water Reservation Program

The water reservation statute, passed by the 1973 Legislature, provides a unique authority for public entities to reserve water for specific future uses. This authority was first exercised in the Yellowstone River Basin when, on December 15, 1978, the Board of Natural Resources and Conservation (Board) approved water reservations for future municipal, agricultural, instream flow and multipurpose uses in the basin. The resulting reservation process in the Yellowstone River Basin is considered a very important mechanism for allocating the basin's future water supply and for allowing the state to protect its right to future beneficial use of its water. The reservants and state government have subsequently placed an emphasis on establishing and administering a workable reservation system.

Among the water reservations approved by the Board in 1978, fourteen conservation districts received a total of 567,261 acre-feet of water per year, primarily for irrigation. To avoid speculation and assure diligence in the use of this reserved water, the Board adopted an on-going administrative process to be satisfied by each public entity holding a water reservation. For irrigation reservations such as those held by conservation districts (CD's), the major administrative requirements included preparation of a general development plan for each reservation; a detailed plan for each project developed; an annual report from each reservant; and a reservation review every ten years or less. The product of these requirements is used by the Board to determine if the objectives of each reservation are being met. The Board retains the authority to extend, modify or revoke a reservation based on the status of each reservation.

DNRC Assistance to Conservation Districts

As new reservation holders the CD's quickly found themselves understaffed and lacking the experience to satisfy the Board's administrative requirements. The CD's were faced with a deadline of December 15, 1981 to comply with their initial reservation planning requirement. In response to the Board's implementation of the Yellowstone Reservations and the CD's new-found obligations, the 1979 Legislature amended the reservation statute to provide for DNRC administrative and technical assistance to those CD's holding reservations. DNRC recognized the level of effort required to provide the necessary assistance and requested funding from the next legislature. The 1981 Legislature responded with passage of H.B. 494 to fund the DNRC assistance.

In assisting the CD's DNRC has acted as a liaison between the districts and the Board, along with providing direct staff assistance to each CD at the local level. By late 1981, the Department was in the process of hiring two professionals who were placed in Billings and Miles City to assist both the Upper and Lower Basin CD's. With this assistance structure in place, all fourteen conservation districts began working to comply with the Board's reservation process requirements.

As an initial step, DNRC assisted the CD's in obtaining an eighteen-month extension for submission of their reservation plans. Subsequent discussions with the Board resulted in interpretation of their reservation planning requirements to include two levels of detail. A General Reservation Development Plan, which was to be prepared by July 1, 1983, included information pertinent to development and

administration of each reservation from a general, long-term perspective. The plan was to include an administrative procedure demonstrating the reservants' ability to process individual requests for reserved water. The Board also required a general development schedule for utilizing reserved water and general resource information for the irrigation projects to be developed. A second, more detailed plan (a Detailed Development Plan) was to be prepared for each individual project use of reserved water, to be submitted to the Board for approval prior to development of the project. Each of these plans was to include specific information regarding the project location, project features, and soils and water requirements. This information is recorded by the reservants and DNRC to meet the reservation records requirements of the reservation statute.

During the eighteen months preceding the July 1, 1983 deadline, the General Development Plans were drafted by the DNRC field staff for review and approval by the CD's. The final plans were then submitted to the Board and subsequently approved. In this period, DNRC also prepared an evaluation of water availability in the Yellowstone River Basin for use by all parties involved in the reservation process.

Once the conservation districts had complied with the Board's initial requirement of submitting General Development Plans, they were in a position to begin putting reserved water to use. This process includes application for reserved water use by an agricultural operator followed by approval, modification or denial by the appropriate CD with final consideration of the request by the Board. A DNRC field staff member or CD representative provides assistance to each applicant by explaining the reservation process, assisting with project planning, and helping with the application preparation. The DNRC staff member then assists the CD in its project approval process by conducting a field investigation and obtaining water rights information and other appropriate information.

After the CD approves a reserved water use application, the DNRC staff member prepares a Detailed Development Plan for the project and presents the plan and application to the Board for final approval. Approved plans are then recorded in the DNRC water rights data base.

Use of Reserved Water

As mentioned earlier, the conservation districts have begun authorizing use of reserved water for irrigation and other agricultural purposes. As of November 16, 1984, 56 projects (Detailed Development Plans) have been authorized to use 19,412.8 acre-feet of water per year in 12 conservation districts. Numerous other applications are currently in process. The following table shows the progress of the various conservation districts in using their reserved water.

APPROVED USE OF CD RESERVED WATER

Conservation District	No. of Projects Approved	Project Water Approved (Acre-Feet)	Remaining Balance (Acre-Feet)
Custer County	5	1,632.6	26,845.4
Dawson County	2	1,382.0	44,473.0
Little Beaver	19	1,198.1	11,574.9
Prairie	4	3,407.0	64,587.0
Powder River	17	5,942.5	7,737.5
Rosebud	2	111.6	86,891.4
Richland County	2	781.0	44,839.0
Treasure County	1	1,500.0	16,861.0
Park	1	500.0	63,625.0
Sweet Grass County	1	2,460.0	43,785.0
Stillwater	0	0.0	16,755.0
Carbon	1	48.0	22,628.0
Yellowstone	1	420.0	57,543.0
Big Horn	0	0.0	20,185.0

Use of reserved water has been highest in the Lower Basin which has historically experienced more irrigation development than the Upper Basin. Much of the reserved water development in the Lower Basin has occurred in the Powder River drainage where economical water-spreading projects show good potential. On the other hand, the Upper Basin has, for a variety of reasons, used less reserved water. Higher development costs and shorter growing seasons, together with depressed farm prices are primary reasons for less development activity.

In spite of the depressed agricultural market, all fourteen conservation districts have been actively promoting the use of their reserved water. DNRC has assisted the CD's with a number of public informational and promotional efforts including preparation of newsletters, fact sheets and brochures. Many districts have held public meetings or presented fair exhibits to spread the word on availability of reserved water. Six CD's in the Lower Basin have taken advantage of Renewable Resource Development Program funds, earmarked for CD reservation development, by conducting a two-year study of major problems restricting use of much of their reserved water.

Since the reservation process in the Yellowstone River Basin is, in fact, an on-going process, the CD's and DNRC will continue to be active. The next major administrative requirement of the Board is a reservation review in 1988 -- ten years after the reservations were initially approved. This review will require all reservants to demonstrate that the objectives of their reservations are being met. Prior to the 1988 review the CD's will be following their reservation plan by processing new project applications, administering current use of reserved water and promoting use of their reservations.

CHAPTER V

Renewable Resource Development Program

A. Program Description and History

The Renewable Resource Development Program (RRD) was established by the Montana Legislature in 1975. (Authority: Title 90 Chapter 2 M.C.A.). The law states that the purpose of the program is to "develop renewable natural resources that will preserve for the citizens the benefit of the state's natural heritage and to ensure that the quality of existing public resources such as land, air, water, fish, wildlife, and recreational opportunities are not significantly diminished by developments supported by this part." In order to do this, the Renewable Resources Development program may provide funds "for the purchase, lease, or construction of projects for the conservation, management, utilization, development, or preservation of the land, water, fish, wildlife, recreational, and other renewable resources in the state; for the purpose of feasibility and design studies for such projects; for development of plans for the rehabilitation, expansion, or modification of existing projects; and for such other and further similar purposes as the legislature may approve." Only public entities are eligible for the RRD program.

B. Program Funding

The funding source for the RRD program is the coal severance tax. Initially the program received 2.5 percent of the half of the coal severance tax revenues not allocated to the constitutional trust fund. This equalled 1.25 percent of the entire coal severance tax. During the 1981 Legislature, the law was changed by S.B. 409. This bill reallocated one-half of the RRD revenues to the new Water Development Program.

In other 1981 legislation, H.B. 600 earmarked the RRD funds for the following project categories:

15% -- for timber stand improvement
40% -- for water development
15% -- for improvements on agricultural lands
10% -- for conservation districts for development of water reservations
20% -- for other projects the department considers important

During the 1983 Legislature, H.B. 486 allocated 15% of the RRD funds from the last category called "Other" to the "Rangeland Resource Loan Program" until 1989. This program is administered by the Conservation Districts Division of DNRC. After funding this program, five percent of the funding for the "other" category remains.

C. Program Administration and Project Review Procedures

The Montana Department of Natural Resources and Conservation (DNRC) administers the RRD program with procedures similar to those used for the water development program. The Department develops application forms and solicits applications for the program. The applications are submitted to DNRC in the even-numbered year prior to the beginning of the Montana legislative session. The application must include information to enable technical, environmental, economic and financial feasibility assessments.

The Department evaluates the proposals, and also solicits technical and financial review assistance from other entities with appropriate expertise such as local, state and federal agencies, and universities.

After the project proposals are reviewed, DNRC ranks feasible projects and makes a funding recommendation for each proposal. The recommendations are presented to the Water Development Advisory Council for their consideration. The recommendations are then made to the governor who in turn makes his recommendation to the legislature. The legislature makes a final funding decision. Once the final funding decision is made DNRC negotiates contracts with the project sponsors for project implementation. Like the water development contracts, RRD contracts include a detailed scope of work defining work to be accomplished, the completion schedule and the project budget. The disbursement of funds is coordinated with the project schedule and budget. Contract agreements also call for quarterly and final reports, which are used in conjunction with field visits, to monitor project progress and completion.

D. Project Ranking and Funding Recommendation Procedure

Since, in this program, there are more projects than funds, the Department ranks feasible projects in order to develop a funding priority and funding level to recommend to the legislature. These priorities reflect the goals required by law for the use of RRD funds. These goals are:

1) enhance public resources
2) optimize public benefits
3) promote conservation and efficient use of renewable resources

The Department and the Water Development Advisory Council have identified other goals which are:

4) need and urgency for the project
5) has minimal environmental impact
6) has potential for statewide application
7) has not previously received funds

A point scoring system was designed to rank all proposals according to how well they met program goals. A proposal could receive a score of up to ten points for each goal. Like the water development ranking system the program score is used to recommend a funding priority schedule for the biennium and the first five program criteria are used to develop a funding level score. The RRD program also has a $100,000 grant limit and the funding level score was used to recommend 50 to 100 percent funding up to that limit. A few modifications to the system were recommended to assure viable projects for the biennium. The results of the program and funding scoring are shown in Tables 4 through 11.

E. FY 1986-1987 Grant Projects (Non-water)

Twenty-three (23) applications were received for funding consideration within the four non-water categories of the RRD program. Of the 13 applications within the Agricultural Land Improvement Category, eight projects dealt with the control of noxious weeds, three with soil resource management, one with grazing management, and one with contaminated soil reclamation. Requests were made for $1,000,504 and $528,400 was recommended for the projects in this category. However, only $150,561 is projected to be available for this category.

Within the Timber category, the two applications received were for continuation of projects that had been previously funded by the RRD program. Requests in this category totaled $289,702 and $110,000 was recommended for them. Since projections indicate $150,561 will be available in this category, it was recommended that the $40,561 not used in the Timber category be transferred to the "Other" category.

Similarly, within the Water Reservation category, the two grant requests totaling $125,000 were recommended to receive $95,000 out of the projected available amount of $100,374. It was recommended that the remaining $5,374 be transferred to the "Other" category.

Two of the six applications considered under the "Other" category were for the development of cross-country ski trails. Others requested funds for conservation education, land exchange techniques, bear-proof refuse containers, and on-farm wind energy studies. Two of the six were reapplications for projects approved for FY 84-85 which didn't receive grant funds. The total requests were for $207,354; $169,800 was recommended for the projects. Only $50,187 is projected to be available for this category; however, with the addition of the $45,935 from the Timber and Water Reservations categories, the total available for the "Other" category will be $96,122.

Tables 5, 7, 9 and 11 detail the funding recommendations for these RRD non-water categories.

TABLE 4
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
IMPROVEMENTS ON AGRICULTURAL LAND CATEGORY
RANKING ORDER AND SCORES

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREES OF ENVIRONMENTAL IMPACT	FULLY UTILIZES RESOURCE AND/OR PROMOTES CONSERVATION AND EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS
1. TOOLE COUNTY Marias River Basin Weed Control	45	6	5	7	7	5	8	7
2. MILE HIGH CONSERVATION DISTRICT Reclamation of Heavy Metal Contaminated Agricultural Lands	44	5	6	8	8	6	4	7
3. MONTANA STATE UNIVERSITY TETON COUNTY Leafy Spurge; Biological Control	44	4	5	7	7	6	8	7
4. JEFFERSON COUNTY CONSERVATION DISTRICT Cooperative Noxious Weed Control	43	6	5	7	6	5	7	7
5. MCCONE COUNTY CONSERVATION DISTRICT Conservation Tillage Demonstration Project	39	4	4	7	6	4	7	7
6. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Mt. Haggin Cross Fencing Project	39	6	4	7	7	2	6	7
7. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Noxious Plant Control on State Wildlife Management Areas	38	6	5	6	6	3	5	7

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREES OF ENVIRONMENTAL IMPACT	FULLY UTILIZES RESOURCE AND/OR PROMOTES CONSERVATION AND EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS
8. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--CONSERVATION DISTRICTS DIVISION Grazing Management for Noxious Weed Control	32	4	3	5	6	2	5	7
9. MONTANA DEPARTMENT OF AGRICULTURE Coordinated Weed Management Project	26	2	2	3	5	2	5	7
10. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--CONSERVATION DISTRICTS DIVISION Rangeland Weed Control Cost Assistance	24	2	2	3	3	2	5	7
11. VALLEY COUNTY CONSERVATION DISTRICT Leafy Spurge Control Project	23	2	2	3	3	5	1	7
12. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVTION--CONSERVATION DISTRICTS DIVISION Soil Survey Mapping	21	2	1	3	1	1	3	10
13. MONTANA STATE UNIVERSITY Economic Incentives and Policy Implications of Plowout	18	0	2	3	0	1	2	10

TABLE 5
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
IMPROVEMENTS ON AGRICULTURAL LAND CATEGORY
FUNDING REQUESTS AND RECOMMENDATIONS

APPLICANT/PROJECT	REQUEST	GRANT RECOMMENDATION	
1. TOOLE COUNTY--Marias River Basin Weed Control	$197,468	$46,000	
2. MILK RIGH CONSERVATION DISTRICT Reclamation of Heavy Metal Contaminated Agricultural Lands	103,961	88,400	
**3. MONTANA STATE UNIVERSITY,TETON COUNTY Leafy Spurge; Biological Control	18,000	14,000	
4. JEFFERSON COUNTY CONSERVATION DISTRICT Cooperative Noxious Weed Control	70,567	46,000	$150,561 projected funds available in this category
5. MCCONE COUNTY CONSERVATION DISTRICT Conservation Tillage Demonstration Project	45,740	34,000	
**6. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Mt. Haggin Fencing Project	53,000	42,000	
7. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS Noxious Plant Control on State Wildlife Management Areas	103,168	83,000	
8. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION—CONSERVATION DISTRICTS DIVISION Grazing Management for Noxious Weed Control	10,600	7,000	
9. MONTANA DEPARTMENT OF AGRICULTURE Coordinated Weed Management Project	100,000	65,000	
10. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION—CONSERVATION DISTRICTS DIVISION Rangeland Weed Control Cost Assistance	150,000	90,000	
**11. VALLEY COUNTY CONSERVATION DISTRICT Leafy Spurge Control Project	20,000	13,000	
12. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION—CONSERVATION DISTRICTS DIVISION Soil Survey Mapping Project	61,000	-0-	
13. MONTANA STATE UNIVERSITY—DEPARTMENT OF AGRICULTURAL ECONOMICS AND ECONOMICS Research the Economic Incentives and Policy Implications of "Plowout" in Montana	67,000	-0-	
TOTALS	$1,000,504	$528,400	

** Reapplications were permitted for projects that were approved for funding by the 1983 Legislature but did not receive any or all of the grant funds because of reductions in coal tax revenues. The recommendations do not exceed the previously approved grant amounts.

TABLE 6
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
TIMBER CATEGORY
RANKING ORDER AND SCORES

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREES OF ENVIRONMENTAL IMPACT	FULLY UTILIZES RESOURCE AND/OR PROMOTES CONSERVATION AND EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS
1. UNIVERSITY OF MONTANA Montana Forest and Conservation Experiment Station	27	2	5	4	5	2	5	4
2. MONTANA DEPARTMENT OF STATE LANDS State Timber Stand Improvements	17	2	3	4	3	0	2	3

TABLE 7
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
TIMBER CATEGORY
FUNDING REQUESTS AND RECOMMENDATIONS

APPLICANT/PROJECT	REQUEST	GRANT RECOMMENDATION	
1. UNIVERSITY OF MONTANA Montana Forest and Conservation Experiment Station	$ 19,359	$ 19,000	$150,561 projected funds available
2. MONTANA DEPARTMENT OF STATE LANDS State Timber Stand Improvement	270,343	91,000	It was recommended that the remaining $40,561 be transferred to the "Other" category
TOTALS	$289,702	$110,000	

TABLE 8
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
WATER RESERVATION CATEGORY
RANKING ORDER AND SCORES

APPLICANT, PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREES OF ENVIRONMENTAL IMPACT	FULLY UTILIZES RESOURCE AND/OR PROMOTES CONSERVATION AND EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS
1. LOWER YELLOWSTONE C.D. DEVELOPMENT COMMITTEE Reserved Water Development Investigation	31	2	3	4	5	2	5	10
2. DNRC CONSERVATION DISTRICTS DIV. Water Reservation Development Program	19	1	2	3	4	0	4	5

TABLE 9
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
WATER RESERVATIONS CATEGORY
FUNDING REQUESTS AND RECOMMENDATIONS

APPLICANT, PROJECT	REQUEST	GRANT RECOMMENDATION	
**1. LOWER YELLOWSTONE CONSERVATION DISTRICT DEVELOPMENT COMMITTEE/Reserved Water Development Investigation	$ 25,000	$25,000	$100,374 projected funds in this category
2. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--CONSERVATION DISTRICTS DIVISION/Water Reservation Development Program	100,000	70,000	
TOTALS	$125,000	$95,000	It was recommended that the remaining $5,374 be transferred to the "Other" category

** Reapplications were permitted for projects that were approved for funding by the 1983 Legislature but did not receive any or all of the grant funds because of reductions in coal tax revenues. The recommendations do not exceed the previously approved grant amounts.

TABLE 10
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
"OTHER" CATEGORY
RANKING ORDER AND SCORES

APPLICANT/PROJECT	RANKING POINTS	ENHANCES PUBLIC RESOURCES	OPTIMIZES PUBLIC BENEFITS; PROVIDES MULTIPLE USES	DEGREES OF ENVIRONMENTAL IMPACT	FULLY UTILIZES RESOURCE AND/OR PROMOTES CONSERVATION AND EFFICIENT USE	NEED AND URGENCY	POTENTIAL STATEWIDE APPLICATION	NOT PREVIOUSLY RECEIVED FUNDS
1. GALLATIN COUNTY West Yellowstone/ Hebgen Basin Bear-Proof Refuse Container	39	2	4	8	6	8	1	10
2. MISSOULA, CITY OF Missoula open space and agricultural land conservation program	38	5	3	6	6	3	5	10
3. MONTANA STATE UNIVERSITY DEPARTMENT OF AGRICULTURAL ECONOMICS AND ECONOMICS Economics of on-farm wind generation	37	2	3	5	6	3	8	10
4. WEST YELLOWSTONE, CITY OF Rendezvous Ski	32	2	4	3	7	2	4	10
5. CASCADE COUNTY PARK BOARD- King's Hill Nordic Ski Center	31	2	4	3	6	2	4	10
6. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Conservation Education Grants Program	28	2	1	3	5	0	7	10

TABLE 11
RENEWABLE RESOURCE DEVELOPMENT PROGRAM
"OTHER" CATEGORY
FUNDING REQUESTS AND RECOMMENDATIONS

APPLICANT/PROJECT	REQUEST	GRANT RECOMMENDATION	
1. GALLATIN COUNTY--West Yellowstone/Hebgen Basin Bear-Proof Refuse Container	69,959	70,000	
2. MISSOULA, CITY OF--Missoula Open Space and agricultural land conservation program	$ 27,500	$ 27,500	
**3. MONTANA STATE UNIVERSITY DEPARTMENT OF AGRICULTURAL ECONOMICS AND ECONOMICS Economics of on-farm wind generation	20,200	14,000	$50,187 projected funds available in this category plus $45,935 transferred from Timber and Water Reservation categories as recommended. Total available funds: $96,122
4. WEST YELLOWSTONE, CITY OF--Rendezvous Ski Trail	38,945	27,300	
**5. CASCADE COUNTY PARK BOARD--King's Hill Nordic Ski Center	10,750	7,000	
6. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION--Conservation Education Grants Program	40,000	24,000	
TOTALS	$207,354	$169,800	

** Reapplications were permitted for projects that were approved for funding by the 1983 Legislature but did not receive any or all of the grant funds because of reductions in coal tax revenues. The recommendations do not exceed the previously approved grant amounts.

APPLICANT NAME: Toole County

PROJECT/ACTIVITY NAME: Marias River Basin Weed Control Project

AMOUNT REQUESTED: $197,468 Grant

TOTAL PROJECT COST: $247,312

AMOUNT RECOMMENDED: $46,000 Grant

PROJECT DESCRIPTION:

Toole County, for Marias River Basin Weed Control, Incorporated, proposes to develop a coordinated management effort for the control of noxious weeds in the Marias River basin in Glacier, Liberty, Pondera and Toole counties. Through this coordinated plan, existing weed infestations will be contained, new outbreaks of noxious weeds eradicated, leafy spurge and spotted knapweed infestations at the edge of the basin will be controlled, and demonstrations of control efforts will be held. Funds from the grant will provide supervision, technical expertise, education, cost share funds, equipment and personnel to private landowners for controlling weeds on their land.

The Marias River Basin Weed Control, Inc., a nonprofit organization formed in 1983 to control noxious weeds in the Marias River basin, will coordinate and direct all activities. Funds for this project will be provided by each county, the National Park Service, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Indian Affairs, Department of State Lands, and this grant. No commitment of these funds has yet been obtained, although most of these agencies have expressed interest in the program, and may contribute to a weed inventory and mapping project for the basin in 1984. The report of that inventory is the basis for the coordinated weed management proposal.

TECHNICAL FEASIBILITY ASSESSMENT:

Noxious weed infestations have been growing by 10 to 27% each year in the Marias River basin. Infestations now cover 962,476 acres. The selected Coordinated Management Plan Alternative will be a more effective alternative than piecemeal control measures tried in the past. The project area encompasses a logical geographical area of infestation by including an entire basin rather than ending at county boundaries. Most control methods will be through the use of chemical herbicides. While chemical control can contain infestations to an area, it does not provide a long-term solution to the weed problems. To be effective, this project must continue beyond the end of the biennium.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $247,312, with this grant providing $197,468 and other contributors providing $49,844. Other contributions include each county at $3,500/year or $28,000, National Park Service $7,529, Forest Service $2,586, BLM $763, Bureau of Reclamation $612, U.S. Fish and Wildlife Service $86, Bureau of Indian Affairs $5,254, and Department of State Lands $5,014. No commitment from these agencies for this funding contribution has yet been made. However, in 1983 the four counties spent $184,000 on countywide noxious weed control, and private landowners and government agencies spent over $1 million.

Of the $247,312 total project cost, $72,000 will be for contract administration and capital supplies. Herbicides and labor will cost $161,312, and $14,000 will be for contingency.

Cost estimates appear reasonable.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled noxious weeds can spread and cause short- and long-term negative environmental effects such as increased soil erosion and water quality degradation. Vegetative forage will be destroyed, impacting agricultural crops and rangeland, and wildlife habitat. Long- and short-term negative environmental impacts can also occur to water quality and wildlife from improper use of chemical herbicides. With proper application of herbicides, however, these impacts can be minimized and the resulting containment of weed infestation will have a positive environmental impact.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will include the conservation of the land resource by protecting it from noxious weed infestations. This will result in prevention of soil erosion and protection of water quality and fish and wildlife habitat.

RECOMMENDATION:

DNRC recommends a grant of $46,000 for developing and coordinating the weed control project, obtaining cooperative funding commitments and initiating the coordinated effort. Funds are not to be used for the purchase of a pickup as described within the proposal.

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APPLICANT NAME: Mile High Conservation District

PROJECT/ACTIVITY NAME: Reclamation Techniques for Heavy Metal Contaminated Agricultural Lands

AMOUNT REQUESTED: $103,961 Grant

TOTAL PROJECT COST: $134,498

AMOUNT RECOMMENDED: $ 88,400 Grant

PROJECT DESCRIPTION:

The Mile High Conservation District, in cooperation with the Headwaters Resource Conservation and Development area, proposes to develop reclamation techniques for heavy metal contaminated agricultural land while insuring that these changes in land use do not adversely affect surface and groundwater in the area.

Agricultural land along the upper Clark Fork River drainage has been subjected to contamination from mine tailings and airborn contaminants from smelter emissions for over 80 years. Extensive riparian land, upland pasture, and cropland are currently either not used or have limited productivity due to toxicity problems. Surface and groundwater resources are also adversely affected by the contaminants, but little information is available about the vertical and areal distribution of the contaminants in the soil and the hydrological system of the area.

This proposal will evaluate differing lime rates for neutralizing heavy metals, and forage species successful in establishing vegetation on contaminated soils. It will demonstrate the effects of tilling as a reclamation technique, evaluate the metal concentrations in plant tissue samples and plant uptake, and develop optimum cost and return information for re-establishing hay and forage production. The mechanisms and rates of contaminant movement in the soil and groundwater at the site will be monitored and documented. An inventory of general groundwater quality in the Silver-Bow Creek-Clark Fork Valley and an examination of the influence of surface waters will be conducted.

Personnel from the Montana Bureau of Mines and Geology and the Soil Conservation Service, along with the land owner, will perform the work associated with this project. Data, maps and results of the project will be published and made available to the Soil Conservation Service, landowners, Department of State Lands and

the Silver Bow Superfund Project. This project will be coordinated with other agencies working in the Clark Fork Drainage to insure dissemination and implementation of project results. There will be no duplication of efforts with the Super Fund projects, but information from both projects will be complementary.

TECHNICAL FEASIBILITY ASSESSMENT:

The project plan was designed with input from the Soil Conservation Service, the Extension Service and the Montana Bureau of Mines and Geology. Two alternative reclamation techniques will be tested: tillage and comparison of differing lime rates. Concurrently impacts to groundwater from these methods will be monitored and evaluated. The approaches are appropriate, and if successful, will provide an innovative method of reclaiming contaminated agricultural lands.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is $134,498 with the grant providing $103,961, the Montana Bureau of Mines and Geology $13,244, the Soil Conservation Service $4,975, the landowner $1,820 and the DNRC Conservation Districts Division 223 program $10,497. Other funding sources are being investigated; their contributions will reduce the grant request.

Grant funds will cover $8,617 in administration costs, $51,488 in personnel costs, $37,378 in travel, materials, soil analysis, and $6,478 for contingencies. The cost estimates appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

This project, if successful, will provide a solution to a severe natural resource problem. This solution will provide long-term positive environmental impacts. No adverse impacts are anticipated.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from reclaiming contaminated agricultural lands will be the improvement of that land quality by making the resource once again available for agricultural production, and enhancing agricultural business opportunities. A solution to a resource problem will be identified, and implementation of that solution will result in enhancing wildlife habitat and improving water quality.

RECOMMENDATION:

DNRC recommends a grant of $88,400.

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APPLICANT NAME: Montana State University & Teton County

PROJECT/ACTIVITY NAME: Biological Control of Leafy Spurge

AMOUNT REQUESTED: $18,000 Grant

TOTAL PROJECT COST: $24,500

AMOUNT RECOMMENDED: $14,000 Grant

PROJECT DESCRIPTION:

The infestation of the noxious weed leafy spurge is expanding in Montana at a rapid and alarming rate. Chemical control measures launched against the weed in the past have not been successful, and in many rangeland situations have not been economically feasible. In other areas, chemical use has been physically impossible or not allowed because of adverse environmental effects (e.g. along waterways). Early attempts at biological control methods have also been unsuccessful, largely due to lack of knowledge about the genetic variability of the leafy spurge plant.

Montana State University, in cooperation with Teton County, proposes to determine the genetic variability of leafy spurge plant material collected from Teton County, to map the genetically distinct populations, and ascertain the influence of this variability on the establishment of natural enemies of leafy spurge. Identified biological control agents will then be released and their establishment and impact on leafy spurge will be monitored.

A Montana State University professor and a graduate student will be working closely with the Teton County Weed Supervisor, a cytogeneticist, and other biological weed control experts and researchers from the Montana Agricultural Experiment Station, the Montana Agricultural Research Center, and the U.S. Department of Agriculture. Results of the project will be made available to private individuals, groups and state and federal agencies.

This biological control project, in conjunction with a chemical control project, was approved for funding by the 1983 Legislature. Due to reductions in coal tax revenues, only the chemical control portion was funded. MSU has reapplied for the $18,000 grant amount previously approved in 1983. The project was started in 1983. MSU has covered $15,584 of the expenditures. They anticipate reimbursement if this grant is awarded. (A contract agreement between MSU, Teton County and DNRC has been signed.)

TECHNICAL FEASIBILITY ASSESSMENT:

The severity of the leafy spurge infestation in Montana and the associated adverse effects to crop and rangeland have been extensively documented. Chemical, mechanical and biological efforts have not been proven effective against the weed. It is known that approximately 18 to 19 distinct species of leafy spurge are found in Montana. Biological control agents now available are known to affect only specific species. It is, therefore, important that the different species of leafy spurge be identified before biological efforts can be effective. MSU is taking an innovative approach to the problem, which if proven effective would be an economically sound and safe method of control.

FINANCIAL FEASIBILITY ASSESSMENT:

The proposed budget for this project is $24,500. Of this amount, $13,000 is for salaries of a graduate student and technician, $3,250 for travel, $6,500 for computer software and data analyses, and $1,750 for equipment, lab fees and miscellaneous. Of the $24,500, the Montana Agricultural Experiment Station will contribute $1,700, and the U.S. Dept. of Agriculture, $4,800. The budget appears adequate and reasonable.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the development of long-term effective controls of leafy spurge, infestation of this weed will continue to adversely affect crop lands, rangeland and wildlife habitat. An effective biological control tool that would help to control and eradicate leafy spurge would also result in reduction of the use of chemical herbicides that could harm the environment.

This project will not have any long- or short-term negative environmental effects.

SUMMARY OF PUBLIC BENEFITS:

The public benefits of this project are in the form of helping to solve the problem of leafy spurge infestation. Through this control, the availability and quality of the land resource will be improved and conserved. As a result, wildlife habitat will be enhanced and soil erosion and property damage prevented. By reducing leafy spurge impacts, agricultural business and employment opportunities will be enhanced.

RECOMMENDATIONS:

DNRC recommends a grant of $14,000 providing that funds are not available from the 1983-84 grant which was approved for this project by the 1983 Legislature. If all the 1983 grant funds are available, the project will not receive funds from this funding cycle.

APPLICANT NAME: Jefferson County Conservation District

PROJECT/ACTIVITY NAME: Cooperative Noxious Weed Control Project

AMOUNT REQUESTED: $70,567 Grant

TOTAL PROJECT COST: $373,065

AMOUNT RECOMMENDED: $ 46,000 Grant

PROJECT DESCRIPTION:

The Jefferson County Weed Board, County Commissioners, Conservation District, and the Boulder City Council propose to develop a cooperative noxious weed control demonstration project. The project will be a cooperative effort between the Jefferson County Weed Board, Jefferson County Commissioners, Conservation District, the Boulder City Council, private landowners, Bureau of Land Management, U.S. Forest Service, Montana Department of State Highways, Jefferson County High School, Dow Chemical, and the Montana Department of Natural Resources and Conservation. The objective of the project is to control noxious weeds in a 70-square-mile area of Jefferson County, to demonstrate the effectiveness of such an approach, and to promote similar efforts.

Spotted knapweed, leafy spurge, dalmation toadflax, Canada thistle and field bindweed infestations have been identified in the project area. A weed inventory conducted during the summer of 1984 will allow cooperators to begin an intensive spray program in the spring of 1985. The county, through the weed board, will provide labor, equipment, and chemicals to treat all highways, county roads, county yards and the school district land twice a year. Funding for treating highway right-of-ways will be provided through a contract with the Montana Department of Highways. In exchange for the control on school district lands, the Boulder High School will participate in weed control education activities. The county has agreed to provide the necessary labor and equipment on Department of Institutions land if the Department of Institutions will provide the chemical.

The county will provide the spray truck, feeder truck, crew, and foreman for up to one month per year including the time necessary for the above commitments to assist in carrying out control on private and state lands. Office space and equipment necessary would be provided for project administration through the Cooperative Extension County Agent's office.

Private landowners will be required to sign a cooperative agreement, agreeing to begin carrying out a weed control project on their property. Whenever possible, landowners will provide necessary equipment for control on private lands. Additional equipment will be available from the county and the conservation district. The landowners will purchase the necessary chemicals as required by the county weed foreman, and will be reimbursed for 50% of the cost. A spray clinic will be held each year for sprayer calibration in the project area.

The Department of State Lands will support the project with as many resources as possible.

On city-owned lands, the Town of Boulder will be responsible for control of noxious weeds within the city limits. The town will provide necessary labor, equipment, and 50% of the chemical costs. The grant would provide the remaining amount. It will be required that control be carried out on private lands in the town, using chemicals where possible or clipping or mowing twice a year.

The Bureau of Land Management and Forest Service will carry out the necessary control measures on land each manages in the project area.

After the project area has undergone intensive control measures, the cooperating agencies and groups will determine the distribution and density of noxious weeds in the treated area and effectiveness of the various control methods. A final report will be completed by the Jefferson County Weed Board. The area will be designated by large signs on each of the highways and roads entering the project area. Tours and workshops will be conducted each year of the program to review the project and its impact.

TECHNICAL FEASIBILITY ASSESSMENT:

Cooperative weed control programs like the one proposed are much more effective than piecemeal approaches to controlling weed infestation, making the cooperative approach the preferred alternative. Chemical control measures have been effective in containing noxious weeds to an area, but the measures do not provide a long term solution to the problem of weed infestations.

Chemical application rates and selection will be based on MSU weed specialists recommendations. The use of a small amount of gall flies will be the only biological method used. Very few areas are considered suitable for mechanical control methods.

Because of its location and the number of public and private entities involved, this is a suitable location for a demonstration site. However, to be effective the program must be continued beyond the biennium.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of this project is estimated to be $373,065. This grant will provide $3,750 for contract administration, $62,322 for 50% cost share for chemicals, $500 for tours and promotion, and $3,994 for contingency for a total grant contribution of $70,567. The DNRC Conservation Districts Division provided $8,165 for purchase of a three-wheel bike, backpack sprayers and labor and materials for conducting the weed survey. The remaining $294,333 is to be provided by private landowners, Jefferson County, BLM, Forest Service, State Lands, State Lands Lessee, the Town of Boulder, and the Department of Institutions. While many of these entities support the project concept, none of these contributors has yet committed to providing these funds. The cost estimates for the project were based on a worst case scenario of weed infestations, and will likely be much less. Until the weed inventory is completed in the summer of 1984, the actual costs of control will not be known. As now presented, the overall cost estimates are not financially feasible.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled noxious weed infestations can result in long-term negative environmental effects through loss of productive agricultural and forage lands, soil and wind erosion, and loss of wildlife habitat. Short- and long-term adverse environmental impacts to water quality, public health, and wildlife can also occur from improper use of chemical control measures. With proper application of chemicals and other control measures, these negative effects can be minimized and weeds can be controlled from spreading, resulting in positive environmental impacts.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will be from improving the land quality by controlling the spread of noxious weeds, protecting wildlife habitat and preventing property damage from weed infestations. Soil erosion will be prevented and agricultural business and employment opportunities enhanced.

RECOMMENDATION:

DNRC recommends a grant of $46,000 because cost estimates were based on a worst case scenario. Funding is conditioned on commitment of funding by all cooperators involved in the control effort.

APPLICANT NAME: McCone County Conservation District

PROJECT/ACTIVITY NAME: Conservation Tillage Demonstration

AMOUNT REQUESTED: $45,740 Grant

TOTAL PROJECT COST: $173,390

AMOUNT RECOMMENDED: $ 34,000 Grant

PROJECT DESCRIPTION:

McCone County is one of five counties under the Soil Conservation Service's proposed Dry Cropland Erosion Control Targeted Areas. McCone County was selected because its historic erosion from wind exceeds 50,000 acres of affected area; in 1984 that acreage was up to 150,000 acres. If federal approval is gained, funds will be allocated to the counties for erosion control practices.

Gary Tibke, State Agronomist for the Soil Conservation Service, states that great improvements have been made in the past five years in tillage equipment, tillage practices and grain variety adaptation. In order to educate the farming public, demonstration areas properly established and monitored afford the farmers an opportunity to see results produced under everyday conditions by their farming associates.

This project will entail the establishment of four demonstration plots of 160 acres each located in different soil type areas over the county. Each plot will demonstrate the following practices.

1. No-till seeding using chem-fallow/alternate cropping.
2. No-till seeding using chem-fallow/flex cropping.
3. Reduced tillage/flex cropping.
4. Reduced tillage/alternate cropping.
5. Conventional tillage/alternate cropping.

On each of these practices, the following reports will be made:

1. Soil loss attributed to wind (tons/ac.)
2. Soil loss attributed to water (tons/ac.)
3. All agricultural inputs (fuel, seed, fertilizer, etc.)
4. All production records by two methods (combine and plot sampling)
5. Yearly operator interviews to evaluate problems and attributes of each practice.

This project will have a minimum life of five years.

TECHNICAL FEASIBILITY ASSESSMENT:

Soil erosion by both wind and water is a major national problem that has been addressed by many entities for a number of years. This research brings out the need for continued and updated education of farmers to better control their soil losses. Demonstration by a farmer to a farmer is considered the best method of education. This project will accomplish that goal. Technically all the practices are sound under given conditions and supervision of the project through its useful life will be carried out by the Soil Conservation Service.

FINANCIAL FEASIBILITY ASSESSMENT:

No short-term financial benefits are gained from the demonstration project. A budget analysis reveals no excess costs; rates used are from SCS and ASCS average cost studies. All funds or in-kind services have been committed except for this application and the "223" funds from the Conservation Districts Division. Providing our grant funds are available, the loss of "223" funds will not keep the project from being implemented. Budget breakdown is as follows:

$45,740 (26%) DNRC
$8,270 (5%) 223 Funds (not committed)
$2,280 (1%) Administrative funds SCS
$3,300 (2%) Conservation District
$53,000 (31%) Technical non-cash services
$60,800 (35%) Cooperators no cash contribution.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be no negative impacts on the environment with this project. Benefits will be gained in time through the decrease in soil loss and increase in water quality.

SUMMARY OF PUBLIC BENEFITS:

The McCone Conservation District serves 394 farms having 490,000 acres of cropland in a county having a population of 2,775 people. The benefits of soil erosion control do not stop here. It directly benefits the neighboring counties, having approximately 2,000 farmers and indirectly benefits the state and nation.

RECOMMENDATION:

DNRC recommends a grant of $34,000.

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APPLICANT NAME: Montana Department of Fish, Wildlife & Parks

PROJECT/ACTIVITY NAME: Mt. Haggin Ranch Cross-fencing

AMOUNT REQUESTED: $53,000 Grant

TOTAL PROJECT COST: $65,000

AMOUNT RECOMMENDED: $42,000 Grant

PROJECT DESCRIPTION:

The Montana Department of Fish, Wildlife and Parks (DFWP) proposes a rest-rotation grazing management system on its 55,000 acre Mt. Haggin Ranch near Anaconda. The acquisition of the Mt. Haggin Ranch included a livestock grazing lease for approximately 4,000 animal units per month. DFWP hopes to demonstrate that with proper grazing management, wildlife habitat can successfully support livestock grazing without adversely affecting wildlife. They hope as well to demonstrate that under rest-rotation wildlife and livestock are compatible, and that the condition of the range resource can be improved.

This project was approved for full funding by the 1983 Legislature. Due to reductions in coal severance tax revenues, only $12,000 was disbursed for the project. DFWP has made this reapplication for the remaining $53,000 of the original $65,000 grant request. (A contract agreement between DDFWP and DNRC has been signed.)

Under this rest-rotation grazing system, 18,000 acres of Mt. Haggin ranch land must be divided into three pastures for managing grazing and nongrazing activities. This division is accomplished by constructing 22 miles of jack-leg fence.

Montana State Prison inmates are providing the labor for this fencing project under the direction of DFWP personnel.

Results of the demonstration project will be made available to other agencies and ranchers who are interested in implementing this type of rest-rotation grazing management system.

TECHNICAL FEASIBILITY ASSESSMENT:

Mr. Al Hormay, the "father of the rest-rotation grazing system", is consulting with DFWP on the design and management of the system. The jack-leg fence, although initially more expensive than a steel post and barbwire fence, requires much less maintenance and is overall the most cost effective alternative.

FINANCIAL FEASIBILITY ASSESSMENT:

DFWP requested 100% funding for this project at $53,000. However, the Department is supplying an unspecified amount of in-kind services in the form of contract administration, project design, supervision and in providing transportation vehicles for prison workers. Materials and supplies for the project cost $37,000, and $28,000 is for labor for building the fence. DFWP has not budgeted other department funds for the implementation of this project.

ENVIRONMENTAL IMPACT ASSESSMENT:

Improper rangeland management can result in many adverse environmental effects to land, water and wildlife resources. The implementation of a rest-rotation grazing management system would likely have positive long term environmental effects by improving rangeland management. There may be some short-term environmental disturbances during the fence construction, but they should not be significant.

SUMMARY OF PUBLIC BENEFITS:

Public benefits associated with this project include: improved land quality in a recreation area by improved grazing management, improved hunting recreation by increasing forage for big game species, protection of water quality and prevention of property damage through erosion control by proper grazing management, improved availability of rangeland resources, and provision of temporary employment.

RECOMMENDATION:

DNRC recommends a grant of $42,000 providing funds are not available from the grant which was approved for this project in 1983. If all the grant funds are available, the project will not receive funds from this new funding cycle.

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APPLICANT NAME: Montana Department of Fish, Wildlife and Parks

PROJECT/ACTIVITY NAME: Noxious Plant Control on State Wildlife Management Areas

AMOUNT REQUESTED: $103,168 Grant

TOTAL PROJECT COST: $139,846

AMOUNT RECOMMENDED: $ 83,000 Grant

PROJECT DESCRIPTION:

The Montana Department of Fish, Wildlife and Parks proposes to evaluate the comparative effectiveness of short- and long-term chemical, mechanical and incendiary (burning) methods of controlling spotted knapweed on a rest rotation livestock grazing system on the Blackfoot Clearwater Wildlife Management Area near Ovando. The nutritional values of plant species and the effects of weed control measures on elk, nongame mammals and birds will also be determined. The need for this project resulted from concern about management of Wildlife Management Areas which may serve as sources for the spread of noxious plants to adjacent private and public lands. Consequently, the legislature has restricted the Montana Department of Fish, Wildlife and Parks acquisition program, a program important in providing elk and deer winter range, fishing and hunting access, nesting and brood-rearing habitat.

The entire Blackfoot Clearwater Wildlife Management Area covers approximately 49,371 acres, with spotted knapweed occurring on 80 percent of the area. Proposed experimental control methods include devising a rest rotation livestock grazing system encompassing 3,345 acres. Within each pasture of this three pasture grazing system, at least one two-acre plot will be treated with the chemical Picloram or 2-4-D, one plot will be mowed, and one plot burned. Within the mowed and burned area a subplot will also be treated with herbicide. Similar methods will be used in the nongrazed area. Surveys of vegetative composition and plant densities will be recorded along with cattle forage utilization and wildlife forage utilization in the experimental area. Habitat use by wildlife and forage nutritional values will be determined.

The entire study is planned to take ten years, with this grant and Fish, Wildlife and Parks providing funds for the first three-year cycle. Annual progress reports will be produced and made available to other Wildlife Management Area managers, biologists, cooperators and to the general public.

Labor and materials for constructing the fence will be provided through a contract with the Montana State Prison. The field assistant will be on contract, and the range consultant who helped develop rest rotation will be consulted in setting up the grazing system. Determination of which private ranches will be allowed to graze cattle on the Wildlife Management Area will be decided by competitive bid. Proceeds from the grazing lease will fund continuation of the noxious weed control study. All other work will be performed by personnel of the Montana Department of Fish, Wildlife and Parks.

TECHNICAL FEASIBILITY ASSESSMENT:

The proposal is technically feasible, and the problem well documented. Traditional types of weed control methodologies have not been successful on rangeland, however, and the chemical, mechanical and incendiary methodologies proposed for this study are traditional ones. The use of chemicals on rangeland has been proven not to be cost-effective because of the size of the treatment area. Mechanical treatment cannot be conducted on much of the Wildlife Management Area because of topography and vegetation. Burning may harm some beneficial rangeland species. The effectiveness of rest rotation grazing is only now being tested on the Department of Fish, Wildife and Parks Mt. Haggin Ranch with funding provided from partial RRD grant funds received in 1983. No innovative biological control methodologies were considered as alternatives. The proposal did not address the need for a coordinated management approach to weed control with adjacent landowners whose land is infested with knapweed and may be providing knapweed seed sources.

Fencing for rest rotation makes up 46 percent of the project cost, while actual control methods are taking place on only 5 percent of the area within the rest rotation area. Fencing will be beneficial for future and continued use of the rest rotation method of grazing, however.

The study is expected to take ten years. Results after the two-year funding cycle may be inconclusive for determining the benefits of the grant funding.

The information gathered with regard to the variety of control methods, impact on wildlife and their use of the infested area will be of significant value to wildlife managers.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $139,848, with the Department of Fish, Wildlife and Parks contributing $36,680 in in-kind services for salaries, travel, overhead, contract administration, equipment, and elk and nongame inventories. This grant will provide $103,168, with $24,132 funding the range consultant and a field assistant. Fencing costs will be $48,000 and lab analysis will be $13,000. Herbicides will cost $4,100 and travel and inflation contingency total $13,936.

Fencing costs have been reduced by contracting with the Montana State Prison for materials and labor. Cost per mile of fence is $6,000. Weed control methods will occur only on a small area within the fenced pastures, but the fence will also provide better future grazing control for the Wildlife Management Area. All other costs appear reasonable and adequate.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled knapweed infestations have long- and short-term adverse environmental effects by replacing native vegetation used for livestock and wildlife forage and increasing the potential for soil erosion and stream sedimentation. Improper use of chemical control measures can adversely affect wildlife and watersheds as well.

Adverse environmental impacts from the proposed weed control project will be negligible, given proper use of herbicides and burning methodologies. If the study identifies a successful methodology which can be applied through the Wildlife Management Area, results will provide long-term positive environmental effects.

SUMMARY OF PUBLIC BENEFITS:

If successful in determining the most effective safe knapweed control methodology, benefits to the public will include improving the quality of both grazing land and wildlife habitat, and protecting water quality from sediment from land erosion. The grazing land resources will be conserved and wildlife habitat enhanced, resulting in improved hunting and other recreational opportunities. Business and employment opportunities will then also be increased. However, because this project will take ten years to complete, these benefits will not be available at the end of the grant funding cycle.

RECOMMENDATION:

DNRC recommends a grant of $83,000.

APPLICANT NAME: Montana Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Grazing Management for Noxious Weed Control

AMOUNT REQUESTED: $10,600 Grant

TOTAL PROJECT COST: $21,200

AMOUNT RECOMMENDED: $ 7,000 Grant

PROJECT DESCRIPTION:

Noxious weed infestations have become a serious threat on western rangelands. Chemical control measures have been largely unsuccessful and expensive, and biological control methods are proceeding too slowly.

The Conservation Districts Division of Montana Department of Natural Resources proposes to demonstrate the effectiveness of the Savory Grazing Method, an innovative intensive range management approach, as a method of noxious weed control on rangeland. Funds would provide 50% cost share to landowners through their local conservation districts for one leafy spurge and one spotted knapweed control project. Neither site has yet been selected.

Soil Conservation Service, Department of Natural Resources and University personnel will survey each project site and gather information on range condition, stocking rates, weed densities, erosion problems and other baseline data to determine Savory Grazing Management stocking rates. The landowners will be requested to attend the Savory Grazing school and provide the daily operation of the grazing unit. Personnel from the Soil Conservation Service, Department of Natural Resources and State University will monitor and evaluate the project for a 5-year period of grazing management. Tours of the site will be sponsored by the local conservation district, SCS and other entities to provide public education about the method.

TECHNICAL FEASIBILITY ASSESSMENT:

Over the past few years there has been an increasing interest in the United States and Montana about the Savory Grazing Method. Developed by Allen Savory of Africa, this innovative method includes time-controlled grazing where livestock grazing is managed according to the rate of plant growth on the range. This prevents overgrazing of important plant species while in some cases allowing increases in the number of livestock grazed per acre. By strengthening the native range plant communities, it is proposed that resistance against weed populations will be increased which will result in a reduction of weed infestations. Reactions to the feasibility of this system from range researchers has been varied, although information exists that indicates this system does provide potential for weed control.

This project calls for the consultation services of Allen Savory, which helps insure that the correct methodologies of the system will be applied.

Because specific sites for implementing the grazing method have not been selected, it is not possible to conduct a specific technical assessment of each project.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost for this proposal is estimated to be $21,200, with the landowners expected to provide $10,600 and this grant $10,600. Each $10,600 contribution will cover the cost of consulting with Allen Savory at $1,600, attending the grazing school at $2,000, and providing fence materials and water supplies at $6,400. Without knowing the specific project site, it is not possible to assess the financial feasibility of the proposal for that site.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without controlling noxious weed infestation on rangeland, many adverse environmental effects such as soil and weed erosion, loss of forage and livestock production, and loss of wildlife habitat may occur. If these control projects are successful, the long term environmental impacts will be positive by preventing these adverse impacts from occurring. There will be no short- or long-term negative environmental impacts from this proposal.

SUMMARY OF PUBLIC BENEFITS:

If these projects are successful in controlling noxious weeds on rangeland, the associated public benefits will be numerous. Land quality will be improved through reduction in weed population. A method of solving weed infestation problems on rangeland will be proven. Land resources will be conserved and made available, providing greater agricultural business opportunities. Soil erosion may be prevented, thus protecting soil and water quality and fish and wildlife habitat.

RECOMMENDATION:

DNRC recommends a grant of $7,000.

APPLICANT NAME: Montana Department of Agriculture

PROJECT/ACTIVITY NAME: Montana Coordinated Weed Management Project

AMOUNT REQUESTED: $100,000 Grant

TOTAL PROJECT COST: $209,825

AMOUNT RECOMMENDED: $ 65,000 Grant

PROJECT DESCRIPTION:

The Montana Department of Agriculture proposes to provide technical and cost share financial assistance to local communities which have developed and are implementing coordinated weed management projects. RRD grant funds will be sub-granted by the Montana Department of Agriculture to approximately seven geographically separated communities for such projects as weed inventories and mapping, weed identification and education, cost sharing, and provision of supplies and materials for weed control. Local recipients will have to match these funds at a minimum amount of 50%. The Department of Agriculture will also provide direct technical assistance to the county weed districts using both Department of Agriculture funds and grant funds.

TECHNICAL FEASIBILITY ASSESSMENT:

Noxious weeds are recognized as a major problem in Montana. Uncoordinated control programs over the years have not been cost effective or effective in long-term control of noxious weeds. Coordinated management efforts can provide more effective control.

The coordinated management approach to weed control is considered the best alternative to fragmented and piecemeal attempts to contain weed infestations. However, because specific weed infestation sites and the local recipients of the grant funds have not been identified, it is not possible to assess the technical feasibility of the selected control alternatives. Criteria for developing the specific coordinated management plans eligible for funding are not defined by the Department of Agriculture in this proposal.

FINANCIAL FEASIBILITY ASSESSMENT:

Of the total project cost of $209,825, this grant will provide $100,000. The Department of Agriculture will contribute $23,125 and the local cooperators will be expected to provide the remaining $86,700. The 100,000 grant will cover $5,000 for Department of Agriculture legal review, accounting and auditing, $8,300 for Department of Agriculture field expenses, and $86,700 for grants to local communities. The Department of Agriculture's $23,125 contribution is for monitoring the grants, printing, travel and personnel. Because specific projects have not been identified to receive funding, the financial feasibility of the control alternatives cannot be assessed.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled noxious weed infestations can severely affect the agricultural and rangeland resource, and can result in wind and soil erosion and stream sedimentation. Proper weed control efforts can prevent the infestations from spreading and improve the environmental quality of the land resource. Improper chemical control methods can result in short- and long-term adverse environmental effects, while proper application techniques can minimize these effects.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from successful control of noxious weeds are numerous. However, it is not possible to attribute all these benefits to this proposal without knowing the specific projects which will be funded.

RECOMMENDATION:

DNRC recommends a grant of $65,000 with none of the funds providing salaries for State Agriculture Department employees.

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APPLICANT NAME: Montana Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Rangeland Weed Control Cost Assistance Program

AMOUNT REQUESTED: $150,000 Grant

TOTAL PROJECT COST: $300,000

AMOUNT RECOMMENDED: $ 90,000 Grant

PROJECT DESCRIPTION:

The Conservation Districts Division of the Montana Department of Natural Resources and Conservation requests $150,000 to provide cost share assistance to farmers and ranchers for control of noxious weeds (primarily leafy spurge and spotted knapweed) on rangeland. Groups of ranches consisting of two to five operators will be eligible to apply for 50% cost share assistance to purchase chemicals to control noxious weeds. Each group must have developed a weed control plan in order to apply. The maximum cost share will be $10,000 or $2,000 per person, whichever is less. Conservation district personnel will provide contract administration and Soil Conservation Service personnel will help coordinate chemical application rates and procedures.

Spotted knapweed is causing significant losses to the livestock industry and substantial damage and reduction in quality wildlife habitat and property values. Additionally, leafy spurge now infects over 545,000 acres of range, and threatens many more. Persistent weed management programs can help keep the weeds from spreading; however, the control costs are expensive, and often the funds are not available.

TECHNICAL FEASIBILITY ASSESSMENT:

Because specific cooperators and sites have not yet been identified to receive funds, it is not possible to complete a technical feasibility assessment of the selected alternatives. Chemical control methods have been shown in some locations to be successful in containing noxious weeds to an area at reduced levels, but they do not provide long-term solutions to infestation problems. No specific coordinated management plan is identified for use by the cooperators, although Soil Conservation Service specifications for chemical rates will be used.

FINANCIAL FEASIBILITY ASSESSMENT:

A $150,000 grant was requested to provide 50% cost share assistance for a total project cost of $300,000. The $150,000 cost share will be provided by the landowners involved. $285,000 of the $300,000 will be spent for chemicals, and $15,000 for fuel. A specific financial feasibility assessment cannot be conducted since specific problem weed sites and control alternatives have not been identified.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled noxious weeds can spread and cause long-term adverse environmental effects such as soil erosion, stream sedimentation, loss of fish and wildlife habitat, and loss of productive forage and agricultural land. Proper application of weed control measures can prevent these adverse environmental impacts. Short-term negative environmental impacts from chemical control measures can be minimized if proper control procedures are followed. However, long-term adverse environmental impacts can result if chemicals are improperly applied.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from the project will result in improved land quality by preventing the spread of noxious weeds. This will conserve the land resource, and prevent erosion and loss of fish and wildlife habitat and recreational opportunity. Damage from weed infestations to private and public land will be minimized, leaving the land resource available for productive use.

RECOMMENDATION:

DNRC recommends a grant of $90,000 to be used only for coordinated weed control projects in logical geographical areas where control efforts will be most effective.

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APPLICANT NAME: Valley County Conservation District

PROJECT/ACTIVITY NAME: Leafy Spurge Control

AMOUNT REQUESTED: $20,000 Grant

TOTAL PROJECT COST: $60,000

AMOUNT RECOMMENDED: $13,000 Grant

PROJECT DESCRIPTION:

Leafy spurge began to infest the Rock Creek drainage in Valley County over 10 years ago, with relatively small, isolated patches. Today, it occupies about 15,000 acres of rangeland within the drainage. Of the 15,000 acres, 50 percent is privately owned, 22 percent is owned by the Bureau of Land Management (BLM), and 20 percent is owned by the state and leased by private landowners.

Because of landowner concerns about the leafy spurge problem, the Valley County Conservation District, the Valley County Weed Board, and the BLM entered into a cooperative agreement for the control of noxious weeds in the county in 1982. The agencies have participated in an inventory of spurge-infested areas. BLM spent $20,000 on chemicals for control applications on public lands in 1982. The chemicals were stockpiled for use in subsequent years.

The conservation district plans to use approximately $4,000 of the requested funds for a part-time manager, and $16,000 for equipment rental and the purchase of chemicals. The chemicals will be distributed to cooperative landowners with the conservation district assisting in its application. The objective of the project is to use Tordon 2K pellets to confine leafy spurge infestation to the Rock Creek drainage. Additional funding will be sought to further control the noxious weed through follow-up chemical applications for a period of up to 8 years.

This project was approved for funding by the 1983 Legislature. However, due to decreased coal tax revenues, Valley County did not receive the funds. (No contract agreement was negotiated.) Since 1983 the Bureau of Land Management has applied chemicals to their infested lands according to the cooperative agreement. Because Valley County did not receive the grant funds, the landowners through their conservation district have been unable to participate fully.

TECHNICAL FEASIBILITY ASSESSMENT:

Containing leafy spurge is important because this weed can spread easily. Use of chemicals such as Tordon has been effective in some locations in containing leafy spurge to an area. However, it does not effectively eliminate the infestation nor provide a long term solution to the problem. Because of its restricted uses, Tordon cannot be used in or near riparian areas. No alternatives were identified in the proposals for controlling the leafy spurge infestation in the riparian area of the Rock Creek Drainage.

While the Valley County Weed Board, the Bureau of Land Management and the conservation district have entered into a cooperative weed control agreement, no detailed coordinated weed control management plan has been developed.

FINANCIAL FEASIBILITY ASSESSMENT:

The conservation district estimates a total project cost of $60,000 to contain the leafy spurge to the Rock Creek Drainage for 7 to 8 years. Twenty thousand dollars was provided by the Bureau of Land Management; this grant request is for $20,000, and $20,000 in additional funds will be sought from other sources in the future. The $20,000 of the Bureau of Land Management contribution was spent for Tordon for use on Bureau of Land Management lands. The 20,000 grant will provide $4,000 for a part-time manager, and $16,000 for Tordon and equipment rental to be provided to private landowners.

ENVIRONMENTAL IMPACT ASSESSMENT:

Uncontrolled infestations of leafy spurge can have a significant adverse impact on the environment through loss of native vegetation, resulting in erosion, stream sedimentation, loss of fish and wildlife habitat, and loss of forage and agricultural crop land. Adverse environmental impacts can also result from the improper use of Tordon. If Tordon label instructions are specifically followed, and only licensed applicators apply the chemical, the adverse environmental impact from this project should be minimized. Consequently the long-term environmental impacts could be positive, through the control of the leafy spurge infestation. These positive effects, however, will last only as long as the controlling methods are continued, or until the leafy spurge infestations are eliminated.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project include land conservation by protecting it from leafy spurge infestation, resulting in improved land resource availability. Wildlife habitat will be enhanced by improving forage and native vegetation populations, and damage to public and private land from weed infestations will be prevented.

RECOMMENDATION:

DNRC recommends a grant of $13,000 to be used in a coordinated method of weed control within Valley County.

APPLICANT NAME: Montana Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT ACTIVITY NAME: Soil Survey Mapping Project

AMOUNT REQUESTED: $61,000 Grant

TOTAL PROJECT COST: $36,000,000

AMOUNT RECOMMENDED: No funding

PROJECT DESCRIPTION:

The Conservation Districts Division of the Montana Department of Natural Resources and Conservation proposes to provide financial assistance to the Soil Conservation Service for work toward completing the Montana state soil survey. Renewable Resource Development grant funds would employ one soil scientist for the 1985-86 biennium.

State soil surveys provide basic information about the soil which is used in making interpretations needed to predict responses of soil to given uses. This information is important in making wise land use planning decisions. With only 49% of the state mapped, Montana is far behind other states in completing its soil survey. The Soil Conservation Service is currently spending more money on soil mapping in Montana than in any other state. Yet it is estimated that the survey will not be completed for 30 more years. Presently, the state of Montana contributes very little funding to this effort.

The final product of a completed state wide survey will be a valuable and usable product for all Montanans. However, given the magnitude of the mapping project, and the small contribution of this grant, it is difficult to document the significance of the products of this specific proposal.

TECHNICAL FEASIBILITY ASSESSMENT:

The soil scientist funded by this proposal will contract directly with the Soil Conservation Service and follow the directives of that agency in performing soil survey and mapping methodologies.

FINANCIAL FEASIBILITY ASSESSMENT:

The approximate cost of completing the state soil survey is 36 million dollars, with the SCS providing $35,939,000 and this grant $61,000. The $61,000 represents one-tenth of one percent of the total project cost. This amount does not represent a significant financial contribution to the overall project.

ENVIRONMENTAL IMPACT ASSESSMENT:

No adverse long- or short-term environmental effects would result from this project. Final completion and utilization of the soil survey and mapping information will result in long-term positive environmental effects.

SUMMARY OF PUBLIC BENEFITS:

The number and types of public benefits associated with completion of the State soil survey are many. However, because of the small contribution of this proposed project to the total mapping effort, it is not possible to attribute these benefits to this specific project.

RECOMMENDATION:

DNRC recognizes the need for state support for the worthwhile and beneficial Montana Soil Survey Mapping Project; however, because the requested grant amount would not be a significant contribution to this $36,000,000 project, DNRC recommends no funding.

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APPLICANT NAME: Montana State University-Department of Agricultural Economics and Economics

PROJECT/ACTIVITY NAME: Economic Incentives and Policy Implications of "Plow-out" in Montana

AMOUNT REQUESTED: $67,034 Grant

TOTAL PROJECT COST: $114,598

AMOUNT RECOMMENDED: No funding

PROJECT DESCRIPTION:

The project is an economic research program concerning plow-out in Montana. During the period 1977-1982, 1,800,000 acres of rangeland was converted to cropland and much of that in 20,000 to 40,000-acre blocks. The Soil Conservation Service has determined that much of this land is marginal or fragile soils. The study will address: 1) the incentives for plow-out, 2) the economic consequences of plow-out and 3) an evaluation of alternatives for land rights and control of plow-out.

TECHNICAL FEASIBILITY ASSESSMENT:

The plow-out in Montana has become a controversial problem that concerns the economic structure, basic soil and water conservation, and landowners' rights. The State of Colorado recognized this problem five years ago and has in the last two years published major studies dealing with the dilemma. These studies were made in similar agricultural climates to those in Montana. Some local legislation has been adopted in Montana and federal legislation is proposed. The project as proposed would require three individuals plus a research specialist to correlate, summarize, and dispense the data.

FINANCIAL FEASIBILITY ASSESSMENT:

These studies provide no immediate monetary benefits. The cost of the study, at $114,598, is in line with standard charges for time and services. Montana State University will provide $47,564 of that cost.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study has no environmental impacts; though plow-out does have impacts, this study deals with the internal economics of plow-out.

SUMMARY OF PUBLIC BENEFITS

The benefit to the general public will be the dissemination of information concerning the results of the study. This will make the public more aware of the reasons and economic effects of plow-out, thus aiding the voters in making rational decisions on any proposals.

RECOMMENDATION:

DNRC recognizes the severity of the "plow-out" problem in Montana and nationwide. Much study has been done in Colorado; however, direct answers and recommendations to solve the problems are lacking. Legislation on the federal level will, in all probability, be enacted placing some restrictions on "plow-out"; Soil Conservation Districts have the power to enact controls on the local level which is being done on an individual basis as needed. Therefore, DNRC feels the timeliness of this study and the need for answers two years hence is not justified, and recommends the project not be funded.

Timber Category
Project Summaries

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APPLICANT NAME: University of Montana, Montana Forest and Conservation Experiment Station

PROJECT ACTIVITY/NAME: Statewide Full Tree Thinning and Removal Demonstrations

AMOUNT REQUESTED: $19,359 Grant

TOTAL PROJECT COST: $31,511

AMOUNT RECOMMENDED: $19,000 Grant

PROJECT DESCRIPTION:

The Montana Forest and Conservation Experiment Station (MFCES), in cooperation with the Montana Department of State Lands, proposes to demonstrate various full tree thinning and removal methods to private landowners throughout Montana. Since 1975 the MFCES has been working to overcome the many problems associated with thinning small trees, by developing full tree thinning and utilization techniques suitable for both gentle and steep terrain. The techniques have been found to be economically feasible for both the small and large timber manager.

Four sites in western and eastern Montana representing the major Montana forest types have been selected for public demonstrations of these full tree thinning and removal techniques. At each site the private woodland owner, and personnel from MFCES and State Lands will be involved. Private landowners, public land managing agencies and industrial forestland owners will be able to witness and learn about these techniques.

DNRC has previously funded two tree thinning demonstrations at Lubrecht Experimental Forest through the Renewable Resource Development program. One was completed in 1983, the other will be completed in 1985. This project will extend these demonstrations to a greater geographical area of Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

Thinning, a practice which concentrates growth of fewer trees of more desirable and usable size, can significantly increase the productivity of forest land. In conventional thinning, the felled trees are left on the ground or burned, making the stand vulnerable to damage from fire and insects, and the understory of little value for grazing and recreation. The proposed demonstrations use an innovative approach to thinning developed by the MFCES. This method involves felling the timber, and piling and removing bunches for processing into hog fuel, posts, rails, house logs, saw logs, or firewood. Lightweight, easy-to-operate inexpensive equipment will be used.

This is a better alternative to conventional thinning because the previously wasted thinned trees are utilized; resulting profits will offset thinning costs. Fire and disease potential is lessened, understory vegetation is enhanced and available for grazing, and recreation and employment are enhanced.

FINANCIAL FEASIBILITY ASSESSMENT:

Of the $19,359 grant request, $5,635 is for the salary and travel of the project manager, $9,650 for salaries and travel of the work crews; $2,000 for miscellaneous supplies, and $2,074 for contingency. MFCES will contribute $6,036 in personnel and equipment, and the Department of State Lands $6,116 for personnel and equipment. The total project cost is $31,511.

The budget appears reasonable and adequate to meet the needs of the project.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without the development of effective and efficient thinning and tree removal methods, adverse environmental impacts such as fire and insect outbreaks may occur. Conventional thinning practices interfere with the growth of understory vegetation used for browse by wildlife, and waste renewable wood resources.

Short-term negative environmental impacts from this project will be lessened because of the use of lightweight machinery. Long-term environmental effects will be positive in the form of reduced potential for fire and insect damage, increased livestock forage and wildlife browse, and renewable wood resource conservation.

SUMMARY OF PUBLIC BENEFITS:

Public benefits from this project include the prevention of tree diseases, improvement to land quality by better management practices, and conservation of wood resources through utilization of thinnings. Improvements would also be made in the availability of the wood resource by implementing tree thinning practices. Erosion would be controlled by use of only lightweight equipment. Wildlife and livestock forage would be enhanced, recreational opportunities improved by removing downed trees, and new business and employment opportunities provided through new profits realized by utilizing thinnings.

RECOMMENDATION:

DNRC recommends a $19,000 grant.

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APPLICANT NAME: Montana Department of State Lands

PROJECT/ACTIVITY NAME: State Timber Stand Improvements

AMOUNT REQUESTED: $270,343 Grant

TOTAL PROJECT COST: $270,343

AMOUNT RECOMMENDED: $91,000 Grant

PROJECT DESCRIPTION:

The Department of State Lands proposes to conduct timber stand improvement activities on state forest lands. These activities are designed to increase the productivity of forest lands for commercial forest products and to provide for a wide range of multiple uses. DSL funds for making these improvements are insufficient to execute all projects on Montana forest lands; therefore, the agency requests funding for the following six categories of forest management operations.

1. Backlog reforestation of 200 acres in Sanders County near Indian Creek by brush disposal, fencing, and planting with conifer seedlings. Cost: $58,260.

2. Slashing to remove noncrop trees to permit brush disposal and reforestation on 989 acres at two locations in Missoula County, two in Mineral County, and one in Flathead County. Cost: $53,750.

3. Tree planting 513 acres of prepared cutover timberlands to establish desirable crop trees in five locations in Lincoln, Granite, Missoula, and Mineral counties. Cost: $37,438.

4. Precommercial thinning to increase tree volume growth and yields per acre on 287 acres of timberland in four locations in Sanders, Mineral, and Flathead counties. Cost: $33,395.

5. Stand conversion of 100 acres of poorly stocked timberland into a productive condition by constructing three miles of access road, disposing of brush and reforesting timberland at Noisy Creek in Flathead County. Cost: $65,500.

6. Road development to secure access to 60 acres of timberland at Winona Ridge in Flathead County. Cost: $22,000.

The proposed projects will use the contracted services of professional forestry laborers.

Results of the project will be in the form of improved timberland resources on state lands.

The Montana Department of State Lands received a $100,000 RRD grant in 1983 for similar projects in different locations in Montana.

TECHNICAL FEASIBILITY ASSESSMENT:

The categories and methods proposed are normal and usual activities which have traditionally occurred on state forest land. No innovative or new methodologies are being applied or demonstrated through this proposal.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project categories to be funded by this grant is $270,343. The Department of State Lands will provide all contract administrative and overhead expenses. The $270,343 grant will be for actual contracted services.

The cost-effective uses of some of these proposed project categories have been questioned by forestry experts. Costs-per-acre figures have varied from 65/acre to $35/acre and the productive capability of the forest acres ranged from 50 to 140 cubic feet/acre/year.

The most cost-effective projects are the tree planting projects and the slashing projects (category numbers 2 and 3), because of investments previously made on these lands, and the 1.5-mile road development project. This road building project, however, may have adverse effects on wildlife, while other projects may enhance wildlife habitat. Recommendations for funding are based on the most cost-effective projects that have the least impact on wildlife habitat.

ENVIRONMENTAL IMPACT ASSESSMENT:

Unmanaged timber-producing forest lands can become infested with disease and insects, and can provide fuel for forest fires. Managing these forest resources can prevent these problems as well as enhance the wildlife habitat of the area, providing long-term positive impacts to the environment. Road building, however, can disturb wildlife by providing for greater human access into their habitat resulting in long-term negative impacts.

Some short-term negative impacts may result from actual construction activities in the area, but these impacts will be minimal.

SUMMARY OF PUBLIC BENEFITS:

Benefits to Montana citizens from these timber stand improvement projects will be the conservation of the renewable timber resource, the provision of business employment opportunities and in some areas, the enhancement of wildlife habitat.

RECOMMENDATION:

Based on project review comments from forestry experts, DNRC recommends a grant of $91,000. This will fund the most cost-effective projects with the greatest timber producing capacity, and those with the least adverse environmental impacts.

APPLICANT NAME: Lower Yellowstone Conservation District Development Committee

PROJECT/ACTIVITY NAME: Reserved Water Development Investigation

AMOUNT REQUESTED: $25,000

TOTAL PROJECT COST: $79,000

AMOUNT RECOMMENDED: $25,000 Grant

PROJECT DESCRIPTION:

The Richland County, Treasure County, Prairie County, Custer County, Powder River and Rosebud conservation districts have formed the Lower Yellowstone Conservation District (CD) Reserved Water Development Committee for the purpose of developing their water reservations as ordered by the Board of Natural Resources and Conservation. Under the order, the conservation districts have up to 25 years to perfect their reserved right by constructing irrigation projects. Since the Board mandated a diligent effort to use reserved water, it is important that the investigation of potential sites be completed as soon as possible.

The Lower Yellowstone Reserved Water Development Committee requests funds to employ a Water Resource Coordinator and to assist in the investigation of the irrigation feasibility of various sites by the conservation districts. The effort will concentrate on alternative methods which address high energy costs and low returns of irrigated agriculture.

The development committee is comprised of one member of each cooperating CD and one non-voting member from the Department of Natural Resources and Conservation (DNRC). The committee's main responsibility will be to oversee the study effort during the two-year investigation period. The committee will review progress and accounting reports, provide guidance, and prioritize the responsibilities and projects of the Water Resource Coordinator. The committee will be directly responsible for accomplishing various goals of the cooperating CDs.

The Lower Yellowstone Conservation District Development Committee has initiated their study based on a total of $79,000 in grant funds previously approved from the RRD and H.B. 223 programs. The RRD funding level is now expected to be $25,000 below that approved by the 1983 Legislature because of limited availability of funds through June 30, 1985. The Committee has reapplied for $25,000 to enable them to complete their study.

ENVIRONMENTAL AND TECHNICAL FEASIBILITY ASSESSMENTS:

The technical feasibility of individual projects will be addressed by the Committee during the course of the study. The environmental impacts resulting from the construction of the projects should be addressed during the permitting and design phases.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is $79,000 which will allow completion of the two-year study. This application is for $25,000 in grant funds which was approved by the 1983 Legislature but unavailable because of limited RRD program funds.

SUMMARY OF PUBLIC BENEFITS:

Primary benefits would be received by the farmers within the boundaries of a new irrigation project. Benefits may include increased profits and revenue, reduced costs, higher property values, resource availability, and an improved quality of life.

RECOMMENDATION:

DNRC recommends a grant of up to $25,000 for completion of the Reserved Water Development Investigation. In no case shall the total amount of Renewable Resource Development Program funds (including funds from the DNRC Reservation Development Program) for this study in the 1981-1983 and 1983-1985 bienniums exceed $74,000.

APPLICANT NAME: Montana Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Water Reservation Development Program

AMOUNT REQUESTED: $100,000

TOTAL PROJECT COST: $100,000

AMOUNT RECOMMENDED: $70,000 grant

PROJECT DESCRIPTION:

The Conservation Districts Division, of the Department of Natural Resources and Conservation (DNRC), is requesting $100,000 from the Renewable Resource Development funds to continue a Water Reservation Development Program.

The program will provide funds to conservation districts throughout Montana for the development and implementation of water reservations. The funds will be used by the CDs for preparation of water reservation applications, technical assistance, contracted services, preliminary and final reservation plan development and through the implementation of the final plan.

The need for this funding has been documented during the last two years as conservation districts along the Yellowstone River, in northeast Montana and in the Clark Fork River basin have required supplemental funding to apply for and implement water reservations. The financial hardship to most districts involved in the reservation process is significant. Normal funding sources do not allow for the expenses that are incurred in the development of a water reservation. These funds will allow the districts to proceed with the development of current and future water reservations without sustaining the financial burden placed upon them if the funds were not available.

Section 85-2-316, MCA, provides for the establishment of reservations of water by governmental entities. The Department of Fish, Wildlife and Parks (DFWP) is currently pursuing a reservation on the Clark Fork River. DFWP also anticipates developing reservations for instream flow on the Upper Missouri River above Canyon Ferry Dam, and the Whitefish and Stillwater Rivers in Flathead County in the near future. It is expected that conservation districts in these areas will begin developing reservations on these rivers also—a process very similar to that followed in the Yellowstone River basin.

ENVIRONMENTAL AND TECHNICAL FEASIBILITY ASSESSMENTS:

These aspects will be addressed by DNRC on a project-by-project basis.

FINANCIAL FEASIBILITY ASSESSMENT:

Grant funds will be used to supplement conservation district funds for preparation of water reservation applications and development of existing reserved rights.

SUMMARY OF PUBLIC BENEFITS:

Primary benefits, received by the direct users of reserved water, include development of an agricultural water supply; increased revenue and profits; reduced costs; higher property values; and an improved quality of life.

RECOMMENDATION:

Funds to the conservation districts are necessary to prepare for future water reservations, and to provide support for the implementation of current water reservations in the Yellowstone River basin. DNRC recommends a grant of $70,000 for this purpose.

"Other" Category
Project Summaries

-1-

APPLICANT NAME: Gallatin County/West Yellowstone Hebgen Basin Refuse District

PROJECT/ACTIVITY NAME: Garbage Container Bearproofing

AMOUNT REQUESTED: $69,959 Grant

TOTAL PROJECT COST: $139,919

AMOUNT RECOMMENDED: $70,000 Grant

PROJECT DESCRIPTION:

The Gallatin County/West Yellowstone Hebgen Basin Refuse District proposes to help reduce bear mortality caused by humans in the Greater Yellowstone ecosystem by bearproofing 140 garbage containers in the West Yellowstone Hebgen Basin Solid Waste Refuse District.

The population of grizzly bears in the Greater Yellowstone is perilously low and declining. This downward population trend has been attributed to loss of habitat due to human development, and excessive human-caused mortality. This mortality is often related to the habituation of bears to the ready supply of food offered by garbage containers. The West Yellowstone area is the only area in the three-state Greater Yellowstone ecosystem that does not keep refuse inaccessible to bears.

The proposal calls for the purchase of 140 bear-proof containers to replace the existing refuse containers. The dumpsters will be emptied by a licensed collector and transferred to the landfill in Ennis. The requested grant will fund 50% of the project, with other private and public sources providing the remaining amount.

The bearproofing will result in lower human-caused bear mortality and would be a significant positive contribution to the survival and continuation of an important and unique threatened species that is Montana's state animal.

TECHNICAL FEASIBILITY ASSESSMENT:

The selected alternative of providing bearproof containers is the most technically feasible alternative considered. Continuous incineration of garbage at every source would not provide consistent control and could result in air quality problems. Continuous hauling of garbage from every source to a transfer station would neither provide consistent control nor be cost effective.

The refuse collector must modify his truck to accomodate the bearproof containers. He has agreed to do so providing all the dumpsters are a uniform size. A contract agreement between the collector and the Refuse District must be signed before purchasing the garbage containers.

The U.S. Forest Service has provided input as to the design and placement of the refuse containers.

FINANCIAL FEASIBILITY ASSESSMENT:

The total cost of the project is $139,919. Of this amount, $6,000 is for the Refuse District to administer the project and $5,000 is for an engineer to assist in design and supervision and placement of the containers. $109,620 will purchase the containers and the remaining $19,299 is for contingency. The cost estimates appear reasonable. RRD grant money will provide $69,959 or 50% of this total cost. The remaining $69,959 has not been secured. Gallatin County has agreed to commit $5,000 to the project, and has requested financial assistance from Montana Department of Fish, Wildlife and Parks, National Audubon Society, U.S. Forest Service, and Yellowstone National Park Service.

ENVIRONMENTAL IMPACT ASSESSMENT:

The continued dependency on refuse as a grizzly bear food source will result in a continued decline in their population, and in the loss of this important species. Bearproofing the refuse containers can help eliminate human-caused bear mortality. This result will be a long-term positive impact to the environment. No short- or long-term negative impacts will result from this project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will be resolving the problem of human-caused bear mortality, conservation of the threatened grizzly bear species, and prevention of human death and property damage from bears attracted to human dwellings and businesses near accessible refuse containers.

RECOMMENDATION:

Because of the 50% match by a large number of financial contributors and the need to provide all the refuse containers at one time, DNRC recommends a $70,000 grant. The grant is conditioned on funding commitments for the 50% match.

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APPLICANT NAME: City of Missoula

PROJECT/ACTIVITY NAME: Missoula Open Space and Agricultural Land Conservation Program

AMOUNT REQUESTED: $27,500 Grant

TOTAL PROJECT COST: $55,000

AMOUNT RECOMMENDED: $27,500 Grant

PROJECT DESCRIPTION:

Missoula and Missoula County have experienced rapid population growth in the past 10 years with housing and other development spreading out into formerly undeveloped agricultural and open space land. The loss of these agricultural lands and open space lands to development have concerned landowners and city and county residents who would like to see these areas remain undeveloped and protected for their agricultural, ecological and recreational values. While some voluntary efforts at conserving these areas have been successful, it is recognized that a systematic conservation strategy for Missoula and Missoula County will provide the most effective means to accomplish natural resource planning goals.

The City of Missoula proposes to develop a voluntary conservation strategy for Mt. Jumbo located just northeast of town, to identify the significant agricultural and open space values of Missoula County, to produce city- and county-wide conservation strategies, and to implement them through the training of city/county personnel. A procedural manual on the use of conservation easements, land exchanges and other voluntary land protection tools will be produced.

The proposal consists of two phases, the first being the development of a strategy to preserve Mt. Jumbo through acquisition, conservation easements, grants, donations, land exchanges, and other means to prevent undesirable land uses. Areas within the county which are crucial to preserve for their agricultural, environmental, recreational, historical or open space value will also be identified. This entire phase will be funded by Missoula County and the City of Missoula at a cost of $27,500.

The second phase consists of developing and implementing county wide conservation strategies and training city and county personnel who will have the responsibility for implementing them. Phase two will be funded by this grant at a cost of $27,500.

TECHNICAL FEASIBILITY ASSESSMENT:

The methodologies for this project are unique and innovative approaches to agricultural land and open space conservation. Detailed "how to" procedural manuals will be developed, and city and county planners will be given actual training in implementing identified strategies. The consultant employed to provide this training and to identify the conservation strategies is highly qualified and experienced in these areas. Local support for the project is extensive.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost is $55,000, with this grant providing $27,500, Missoula County $17,500, and the City of Missoula $10,000. All local funding commitments have been made. Phase I costs covered by the local funds include $8,500 for developing the Mt. Jumbo conservation strategy, and $19,000 for identifying and documenting county wide conservation values. Phase II costs covered by the grant include $5,000 for strategy development, $10,000 for training seminars, and $12,500 for developing procedural manuals. All cost estimates appear reasonable.

Missoula County has also provided the County Planning Office with $23,000 for staff to work with the consultants in developing a coordinated strategy.

ENVIRONMENTAL IMPACT ASSESSMENT:

Without protecting agricultural lands and open spaces from urban development, long-term negative impacts to the environment can occur with loss of wildlife habitat and productive agricultural lands, degraded water quality, soil erosion and more. Conservation of these areas through this project will have positive long-term environmental impacts by conserving the land resource, protecting wildlife habitat, and preventing soil erosion and water quality degradation. No adverse environmental impacts will occur from this project.

SUMMARY OF PUBLIC BENEFITS:

Water and land quality will be improved by preserving fragile areas from development, thus protecting domestic and agricultural water supplies. Erosion will be prevented and the land resource conserved. Key fish and wildlife habitats will be protected, providing increased recreational opportunities. New business and employment opportunities will arise from the increased recreational opportunities and the preservation of agricultural farmland.

Benefits to the public from this project could include the prevention of death, personal and property injury and disease by conserving and protecting areas from development that contain geological, flood or fire hazards.

RECOMMENDATION:

Because of the unusual amount of local funding contributions and because of the need for the entire grant amount to maintain the viability of the project, DNRC recommends a $27,500 grant.

APPLICANT NAME: Montana State University, Department of Agricultural Economics and Economics

PROJECT/ACTIVITY NAME: Economic Feasibility of On-Farm Wind Energy Conversion Systems

AMOUNT REQUESTED: $20,200 Grant

TOTAL PROJECT COST: $20,200

AMOUNT RECOMMENDED: $14,000 Grant

PROJECT DESCRIPTION:

Increasing interest in wind energy conversion systems (WECS) as a renewable energy resource has led to the need for sound information on the economics of these systems. General as well as specific investment and profit evaluations are necessary for the individual considering the installation of a wind energy conversion system.

This project would develop and make available to agricultural producers a detailed economic analysis form that will allow them to carefully analyze the feasibility of a wind energy conversion system for their own particular situation. The form would be designed to guide producers through complicated profitability, cash-flow, and income tax calculations.

The project would also use the form to determine the economic feasibility of small on-farm wind energy conversion systems for a variety of situations in Montana, including different geographical locations, types and sizes of farms and ranches, and alternative future energy costs. These case studies will be useful as broad-based, as well as detailed, guides for individual agricultural producers.

The project will be conducted by faculty from Montana State University and Montana Cooperative Extension Service personnel.

This project was approved by the 1983 Legislature. However, due to decreased coal tax revenues only $12,000 will be available. MSU is reapplying for the previously approved amount of $20,200 which will be reduced to $8,200 if the $12,000 is disbursed this biennium. (A contract agreement between MSU and DNRC has been signed.)

TECHNICAL FEASIBILITY ASSESSMENT:

The technical feasibility of wind energy conversion systems has been well established. This proposed activity is for an economic evaluation of this system. Current professional literature and economic principles will be applied to this project activity.

FINANCIAL FEASIBILITY ASSESSMENT:

MSU has requested 100% funding for this project. Of the $20,200 requested, $14,000 is for salaries and benefits, $1,000 for publication, $500 for computer work, and $500 for travel and miscellaneous. This budget should be adequate to meet the needs of the project activities.

ENVIRONMENTAL IMPACT ASSESSMENT:

The study results when applied should have a positive effect on the conservation of energy, thus lessening the demand for non-renewable energy resources. No adverse short- or long-term environmental effects are anticipated from this study.

SUMMARY OF PUBLIC BENEFITS:

Through implementation of the results of this study, the public benefits gained from this project may include: energy resource conservation through the development of a renewable energy source, improvement in the availability of the renewable wind resource, addition or improvement to agricultural and domestic water supplies by increased availability of energy, improvement to land quality by providing irrigation opportunities at low cost, and the provision of business and employment opportunities through expanded agricultural opportunities and wind technology.

RECOMMENDATION:

DNRC recommends a grant of $14,000 providing funds are not available from the grant which was approved for the project in 1983. If all the '83 funds are available, the project will not receive funds from this funding cycle.

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APPLICANT NAME: City of West Yellowstone

PROJECT/ACTIVITY NAME: Rendezvous Ski Trails

AMOUNT REQUESTED: $38,945 Grant

TOTAL PROJECT COST: $38,945

AMOUNT RECOMMENDED: $27,300 Grant

PROJECT DESCRIPTION:

The growth of the cross country ski recreation industry at West Yellowstone is limited because only 11 km of groomed trails are available. The City of West Yellowstone proposes to develop approximately 60 km of ski trails along with sanitary facilities and warming huts. The district ranger of the Gallatin National Forest has agreed to provide the land necessary for the expanded ski area.

The Rendezvous Ski Trails located on the south boundary of West Yellowstone were started in the mid-1970's by local ski enthusiasts. As nordic skiing became more popular, many winter recreationists were attracted to the area. In 1983, the U.S. Forest Service delegated the responsibility of trail maintenance and grooming to the City of West Yellowstone through the Chamber of Commerce. Local businesses donated over $2,500 to provide better grooming equipment and regular trail grooming.

Over 6,000 skier days were documented during the 1983-84 ski season. U.S. Olympic nordic and biathalon ski teams have used the area for fall training for the past three years due to the consistent early snows in the area. They have expressed interest in designating the area as their official training site. An expanded trail system and facilities would increase the likelihood of this happening. The proposed expanded trail system will also accommodate events for the Special Olympic Winter Games held by Montana and other states.

TECHNICAL FEASIBILITY ASSESSMENT:

The City of West Yellowstone has worked closely with the U.S. Forest Service and a private recreation consultant in planning the trail system and facilities. The selected alternatives appear to be sound.

FINANCIAL FEASIBILITY ASSESSMENT:

The total project cost of $38,945 has been requested with $3,500 for administration, $17,126 for labor and equipment rental, $12,725 for materials, and $5,544 for contingency. The cost estimates appear reasonable.

ENVIRONMENTAL IMPACT ASSESSMENT:

Some short-term adverse environmental effects may result during trail construction from removal of vegetation. Since snowmobilers use a nearby area, the influx of skiers should not significantly affect wildlife habitat. No long-term negative or positive environmental effects are anticipated for this project.

SUMMARY OF PUBLIC BENEFITS:

Benefits to the public from this project will be the provision and improvement of cross country skiing recreational opportunities. The ski trails will attract visitors to the area, providing new business and employment opportunities for West Yellowstone.

RECOMMENDATION:

DNRC recommends a $27,300 grant.

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APPLICANT NAME: Cascade County Park Board

PROJECT/ACTIVITY NAME: Kings Hill Nordic Ski Center

AMOUNT REQUESTED: $10,750 Grant

TOTAL PROJECT COST: $10,750

AMOUNT RECOMMENDED: $7,000 Grant

PROJECT DESCRIPTION:

The Great Falls Cross Country Ski Club, under sponsorship by Cascade County, has requested a $10,750 grant to be used for developing, expanding and maintaining the nordic ski facilities at Kings Hill near the Showdown Winter Sports Area. The club members plan to develop approximately 22 km of trail, provide trail grooming, maintenance and signs, and construct three warming huts. Some of the trails will be specially groomed to provide safe conditions for the children of the Montana School for the Deaf and Blind of Great Falls who would use the area in their ski program. The area is ideal for cross county skiing because snow conditions are consistently good and provide a long ski season. With expansion of the ski facilities, more winter recreationists will be attracted to the area. Also, the area's alpine terrain may be used by persons training for the 1988 Winter Olympics. This project was approved for funding by the 1983 Legislature, but due to reductions in coal tax revenues did not receive the grant. (A contract agreement has been negotiated.)

TECHNICAL FEASIBILITY ASSESSMENT:

The Great Falls Cross Country Ski Club has utilized the services of a private consultant in designing the ski trail system. They have worked with the District Forest Service Ranger in coordinating arrangements regarding use of the parking lot maintained by the local snowmobile club. The Forest Service has not yet agreed to the construction of the warming huts.

FINANCIAL FEASIBILITY ASSESSMENT:

A total of $10,750 has been requested. Fuel and routine maintenance for two years is estimated to cost $1,000; $2,250 is for the services of heavy equipment and consultant fees; $500 is appropriated for trailhead signs; and $2,500 for a snowmobile for grooming trails. Labor costs are $1,000. $2,500 is for materials for the shelters, and $1,000 for contingency. These cost estimates appear reasonable.

Members of the Cross County Ski Club will continue to contribute several hundred hours of volunteer labor each year.

ENVIRONMENTAL IMPACT ASSESSMENT:

There will be some short-term negative environmental impacts from the construction of the trails as vegetation is removed. The Forest Service has not supported the construction of warming huts because of lack of sanitary facilities in the area. Because the area is already used by snowmobilers, the influx of cross country skiers should not have a significant adverse impact to the wildlife habitat in the area. No long-term positive or negative impacts are anticipated from the project.

SUMMARY OF PUBLIC BENEFITS:

This project would provide benefits to the public by providing and improving cross country skiing recreational opportunities. As more people are attracted to the area, nearby businesses and communities will be provided with more business and employment opportunities.

RECOMMENDATION:

DNRC recommends a $7,000 grant.

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APPLICANT NAME: Montana Department of Natural Resources and Conservation, Conservation Districts Division

PROJECT/ACTIVITY NAME: Conservation Education Grants Program

AMOUNT REQUESTED: $40,000 Grant

TOTAL PROJECT COST: $40,000

AMOUNT RECOMMENDED: $24,000 Grant

PROJECT DESCRIPTION:

The Conservation Districts Division of the Montana Department of Natural Resources and Conservation proposes to promote the development of conservation education in Montana by providing grants to conservation districts for a variety of educational activities. Conservation districts applying for grants must have budgeted their entire 1.5 county mill levy before being eligible. Conservation Districts Division personnel will review all grant applications and make funding recommendations to the Department of Natural Resources and Conservation Director, who will make a final funding decision. It is estimated that about one-third of the Montana conservation districts would be eligible and interested in the program. Types of projects that will be eligible for funding include public education on weed control, development of public service announcements on soil and water conservation, establishment of summer workshops for teachers, establishment of conservation libraries, and sponsorship of conservation tours and workshops.

Increased public awareness of conservation issues and involvement in them is widely acknowledged to be a critical issue in resource conservation. The only long-term solution to soil and water conservation crises is the development of a sound land ethic in our population and particularly in our young people. Conservation districts are equipped to take the lead in cultivating land stewardship in Montana providing that the necessary funds are available to carry out the educational components.

TECHNICAL FEASIBILITY ASSESSMENT:

Because no specific projects have been identified to receive funds for this project, it is not possible to assess the technical feasibility of the selected alternatives. Educational efforts, however, are considered important to promote conservation practices and an understanding of our natural resources.

FINANCIAL FEASIBILITY ASSESSMENT:

A $44,000 grant was requested. Ten thousand dollars will be used to fund a computer programmer for developing educational programs and application examples for school children, $10,000 for outdoor class development, $5,000 for teachers' conservation workshops and student scholarships, $6,000 for printing brochures, and $9,000 for travel, tours and promotion. Some Conservation Districts Division 223 funds may also be available for funding education programs, but this source is limited due to the variety of projects the 223 program funds.

ENVIRONMENTAL IMPACT ASSESSMENT:

No long- or short-term negative environmental impacts will result from this project. Conservation education can provide long-term positive environmental effects by promoting improvement to water and land quality, reduction of erosion, improvement to fish and wildlife habitat, safe use of chemicals, and conservation of natural resources.

SUMMARY OF PUBLIC BENEFITS:

Effective conservation education provides public benefits in all resource conservation categories. However, without knowing the specific activities for which this grant money would be used, it is not possible to determine the specific public benefits that would be enhanced.

RECOMMENDATION:

DNRC recommends a grant of $24,000.

CHAPTER VI

Summary of Previously Funded Projects

A. Water Development Program -- 1984-85 Biennium

The 1983 Legislature in H.B. 897 approved the first projects to be funded under the water development program. Eighty-three projects were approved for grant and loan funds during the 1984-1985 Biennium. Coal tax revenues were expected to be sufficient to provide grant funds for forty-one of those projects. During the biennium coal tax revenues decreased sharply. As a result the number of projects expected to receive grant awards was reduced to eighteen. FY 1985 revenues are still uncertain and it is possible additional projects will be funded. The eighteen grant projects fundable based on the conservative revenue projections will be under contract with the Department by December 1984. A few additional projects have contracts with the Department which were negotiated prior to the change in the revenue picture. Because of the unexpected shortfall sponsors who expected to receive grant funds during the biennium were invited to reapply. Several appear on the funding tables for the next biennium. Of the projects which the Department hopes to fund this biennium five are for private sponsors; three of these have already proceeded with their projects. The remaining sponsors are public entities. Thirteen of the fundable projects are related to agriculture and include construction of irrigation systems, dam repair, streambank stabilization projects and saline seep control programs. Thirteen projects are related to water quality and water supply problems and include two groundwater studies, an areawide water management study, seven public water systems and several feasibility studies for water systems.

Following the 1983 Legislature projects approved for loans were asked to declare their intent to use their loan authority so that preparations could begin for a Montana Water Development General Obligation Bond. Six private sponsors and eight public entities have proceeded. They have or expect to issue revenue bonds for sale to the Department or, in the case of private sponsors, close loan agreements before the end of the biennium. These loan projects also include one private sponsor approved for loan funds by the Department director during the interim and three projects which chose to borrow their grant awards because of the unlikelihood that revenues would be collected. Six of the loan projects are for irrigation systems and eight are for public water systems. Loans are financed from the proceeds of the $1.3 million Water Development General Obligation Bond issued in October 1983.

Grant and Grant/Loan Combination Projects

1. A rancher received a $25,000 grant and a $100,000 loan to construct a storage reservoir and sprinkler irrigation system.

2. The Whitefish Water and Sewer District received a $100,000 grant for a water resource management plan.

3. The Jefferson Valley Conservation District will receive a $100,000 grant for erosion control measures on Pipestone Creek.

4. The Triangle Conservation District has received a $100,000 grant for a saline seep control program in the 11-county area.

5. The Geraldine Water District has received a $100,000 grant and will receive a $100,000 loan to partially fund a rural water system. A loan from the Montana Coal Severance Tax Bond proceeds will fund the remaining cost.

6. The City of Bozeman has received an $87,000 grant for a feasibility study for a rehabilitation program for Mystic Lake Dam.

7. The City of Helena has received a $24,000 grant to analyze the stability of Chessman Reservoir.

8. The Department of Fish, Wildlife and Parks has received a $100,000 grant to rehabilitate the South Sandstone Creek Dam.

9. The Department of Fish, Wildlife and Parks and the Bitterroot Conservation District will receive a $40,000 grant to provide supplemental flows to the Bitterroot River from the Painted Rocks Reservoir.

10. The Sheridan County Conservation District has received a $100,000 grant to study the characteristics of the groundwater resource in northeastern Montana.

11. An irrigation company received a $100,000 grant and a $100,000 loan to partially fund a comprehensive rehabilitation program for their irrigation system.

12. The Chouteau County Conservation District received a $52,000 grant to conduct a groundwater study in the area.

13. The Ingomar Water and Sewer District received a $22,000 grant to partially fund a new water system for the District.

14. The Department of Fish, Wildlife and Parks has received a $100,000 grant for the rehabilitation of Gartside Dam.

15. The University of Montana has received a $100,000 grant to analyze the groundwater associated with the northern part of Flathead Lake.

16. The City of Laurel has received a $100,000 grant to line irrigation ditches adjacent to the city.

17. The Town of Culbertson is receiving a $100,000 grant and a $100,000 loan to partially fund a water system.

18. The Rosebud Conservation District is receiving a $16,000 grant to complete water management measures for the irrigation system.

19. The Devon Water Association received a grant of $27,000 to partially fund a water treatment facility.

20. The Cascade and Teton County Conservation Districts will receive a $100,000 grant for the Muddy Creek watershed management program.

21. A water users association will receive an $88,000 grant for a water system if residual funds can be secured and committed.

22. The Greenfield Irrigation District will receive a $87,000 grant, if funds are available, to begin an automation program for irrigation flow monitoring. They have received a part of their grant.

23. The Box Elder Water District will receive a $100,000 grant, if funds are available, for a water supply test well program.

24. The Rosebud Conservation District will receive a $5,500 grant, if funds are available, for a streambank stabilization program.

25. The Antelope Water and Sewer District will receive a $100,000 grant, if funds are available, and a $100,000 loan for a new water system.

Loan Projects from General Obligation Bond Proceeds

1. The Town of Judith Gap received a loan of $24,000 for its water tower. (This project received a $6,000 grant from the Renewable Resource Program.)

2. The Town of Virginia City received a $30,000 loan for water and sewer lines.

3. A rancher received a $81,660 loan for an irrigation project.

4. A rancher received a $75,000 loan to develop a well and irrigation system. The loan was applied for and approved by the Director during the interim.

5. The Town of Winnett received a $137,000 loan ($37,000 of which was a grant award not expected to be funded) to rehabilitate its water system.

6. A rancher will receive a $42,000 loan to develop an irrigation project.

7. Hamilton will receive a $182,000 loan ($82,000 of which is a grant award not expected to be funded) to develop a well for water supply.

8. Flaxville has received a $50,000 loan (of which $6,000 was a grant award not expected to be funded) to develop a water supply.

9. A canal company has received an $80,000 loan for rehabilitation of the irrigation system.

Loan Projects from Coal Severance Tax Bond Proceeds

1. Belgrade will receive $940,000 for water system improvements. The loan carries an interest rate of seven percent for five years and 10.26 percent (the state bond rate) for the remainder of the term.

2. Big Fork will receive $250,000 to help finance a sewerage system. The loan carries an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

3. The Bitterroot Irrigation District will receive $1,180,000 to convert 3,300 acres to gravity flow irrigation. The loan carries an interest rate of three percent for the life of the loan.

4. Columbia Falls will receive $200,000 for water and sewer lines. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

5. Conrad has received $250,000 for a water transmission line. The loan carries an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

6. Culbertson will receive $704,000 for water system improvements. The loan will carry an interest rate of five percent for the loan term. Culbertson is also receiving a $100,000 grant and a $100,000 loan from General Obligation Bond proceeds.

7. The East Bench Irrigation District will receive $1,250,000 to convert 6,000 acres to gravity flow irrigation. The loan will carry an interest rate of three percent for the term of the loan.

8. Ennis will receive $180,000 for sewerage system improvements. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

9. The Geraldine County Water District will receive $1,733,000 to construct a water system. The loan will carry an interest rate of 6.5 percent for the life of the loan.

10. Libby will receive $590,500 for sewerage system improvements. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

11. The Martinsdale Project will receive $250,000 for dam rehabilitation. The loan will carry an interest rate of 10.26 percent for the bond term.

12. The Pondera Conservation District will receive $555,000 for irrigation system improvements in the Lower Birch Creek watershed. The loan will carry an interest rate of six percent for the bond term.

13. The Power-Teton County Water and Sewer District will receive $121,370 for construction of a sewerage system. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

14. The Sage Creek Water District will receive $623,000 to construct a water system. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the term.

15. Shelby has received $592,000 for sewerage system improvements. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the bond term.

16. Three Forks will receive $435,000 for water system improvements. The loan will carry an interest rate of seven percent for five years and 10.26 percent for the remainder of the bond term.

B. Projects Funded Directly by the 1983 Legislature

In addition to the water development grants the 1983 legislature approved four water projects to receive funds from the interest on the Resource Indemnity Trust Fund should funds become available during the biennium. It was possible to fund these projects and DNRC has administered the following grants:

1. Triangle Conservation District - $50,000 for saline seep abatement work;

2. Sheridan County for the Northeast Montana Groundwater Study - $150,000;

3. Milk River Irrigation Districts and Liberty County for preparations of a license application to the Federal Energy Regulatory Commission for the development of hydropower in Tiber Dam - $100,000;

4. City of Glasgow for feasibility analysis of obtaining a municipal and agricultural water supply from Fort Peck - $48,000.

C. Renewable Resource Development Program

1978-79, 1980-81 and 1982-83 Bienniums

The 1977 Legislature appropriated the first funds for the Renewable Resource Development Program. Of the five applications received in 1977, four were funded for a total grant amount of $500,000. Projects included improvements to irrigation, a water rights study, and planning for landfills. In 1979, 10 of 13 applications received grant funds amounting to $1,137,000. Types of projects funded include biological weed control, saline seep control, streambed preservation, irrigation system improvements, and recreation facilities. The 1981 Legislature provided $3,120,000 in grants to 20 of the 27 applications considered. Weed control, irrigation system improvements, streambank reclamation, tree thinning, and saline seep reclamation were the major project types that received funds. The total grant amount awarded in 1977, 1979, and 1981 was approximately $4,760,000.

1984-85 Biennium

The 1983 Legislature approved grant funding for 78 projects. However, because of reductions in coal tax revenues, funding is only available for about 15 projects. A description of those projects follows:

1. Montana Bureau of Mines and Geology In separate legislation, H.B. 819 appropriated $60,000 directly to the Montana Bureau of Mines and Geology for monitoring and assessing impacts on groundwater from coal and hard-rock mining activities, with a priority for monitoring flooding impacts at the Berkely Pit in Butte and the coal mining areas of southeastern Montana. The funds were spent on monitoring the Berkely Pit flooding.

2. Montana State University has received $31,811 for a riparian grazing study to provide information on cattle grazing management for maintenance and protection of riparian vegetation and water quality.

3. Montana State Prison Ranch has received $39,995 for the development of an irrigation and fertilization system for prison ranch land. (The Interim Legislative Finance Committee approved a change in project scope in 1984, eliminating the fertilization portion of the project.)

4. Town of Columbus has received $44,000 to stabilize a portion of the Yellowstone River bank to prevent erosion of a reclaimed solid waste landfill and an abandoned sewage treatment area.

5. Town of Judith Gap has received $6,000 to replace the town's water storage tank to insure adequate water supply and pressure for fire fighting capability.

6. Montana Agricultural Experiment Station has received $50,000 for continuation of study, collection and distribution of biological weed control agents for controlling noxious weeds.

7. Conservation Districts Division, DNRC has received $76,000 for the development of water reservations throughout Montana. Funds have been provided to local conservation districts for water reservation development assistance.

8. Conservation Districts Division, DNRC has received approximately $120,708 to make loans available to local conservation districts for projects improving the rangeland resource. (This Rangeland Resource Program was also funded through the RRD program in 1979 and 1981.)

9. Lewis and Clark County has received $22,554 to establish a program where farmers and ranchers could keep agricultural land in production through the economic assistance provided by land exchange agreements.

10. Montana Department of State Lands will receive approximately $100,000 to fund a variety of timber stand improvement projects in western Montana to increase the productivity of forest lands for commercial timber products.

11. Lower Yellowstone Conservation District Reserved Water Development Committee will receive $29,000 for the development and administration of the Yellowstone River water reservations in the following counties: Richland, Treasure, Prairie, Custer, Powder River, Rosebud, and in the Little Beaver Conservation District.

As of November 1984, it is questionable as to whether the remaining five projects will be fully funded due to uncertainties about the actual amount of coal tax revenues available. Project Numbers 12, 13 and 14 have received a small portion of their grants.

12. Montana Department of Fish, Wildlife and Parks will receive $65,000 for the establishment of a rest rotation grazing stystem on the Department-owned Mount Haggin Ranch near Anaconda. The Department hopes to demonstrate the compatibility of wildlife and livestock on a managed grazing area as well as to make improvements to the range.

13. Montana State University will receive $20,200 for the study of the economic feasibility of small on-farm wind energy conversion systems.

14. Teton County Weed Control District will receive $30,000 for the chemical and biological control of leafy spurge along the Teton River. Twelve thousand dollars was available for the chemical control efforts, but the biological control efforts have not been funded.

15. Lubrecht Experimental Forest will receive $57,611 for the demonstration of low cost tree thinning methodologies on steep terrain as a means for landowners to realize maximum benefits from such tree stands.

APPENDIX A

WATER DEVELOPMENT ADVISORY COUNCIL

A Water Development Advisory Council was appointed by the Governor in 1982 and 1984 to review water development applications and assist in developing recommendations to the Governor. The Council is established in accordance with Section 2-15-122, MCA. Members have contributed a great deal of time and effort to the program and the Department appreciates their efforts very much. The names of the 1984 Water Development Advisory Council follow.

Gordon McGowan, Chairman
Highwood, Montana

Bernard Harkness
Dell, Montana

Senator Ted Neuman
Vaughn, Montana

Fred Flanders
Helena, Montana

Russ Brown
Helena, Montana

Senator Bruce Crippen
Billings, Montana

Representative Ted Schye
Glasgow, Montana

Representative Gene Ernst
Stanford, Montana

Ken Kelly
Helena, Montana

Philip Davis
Bozeman, Montana

APPENDIX B

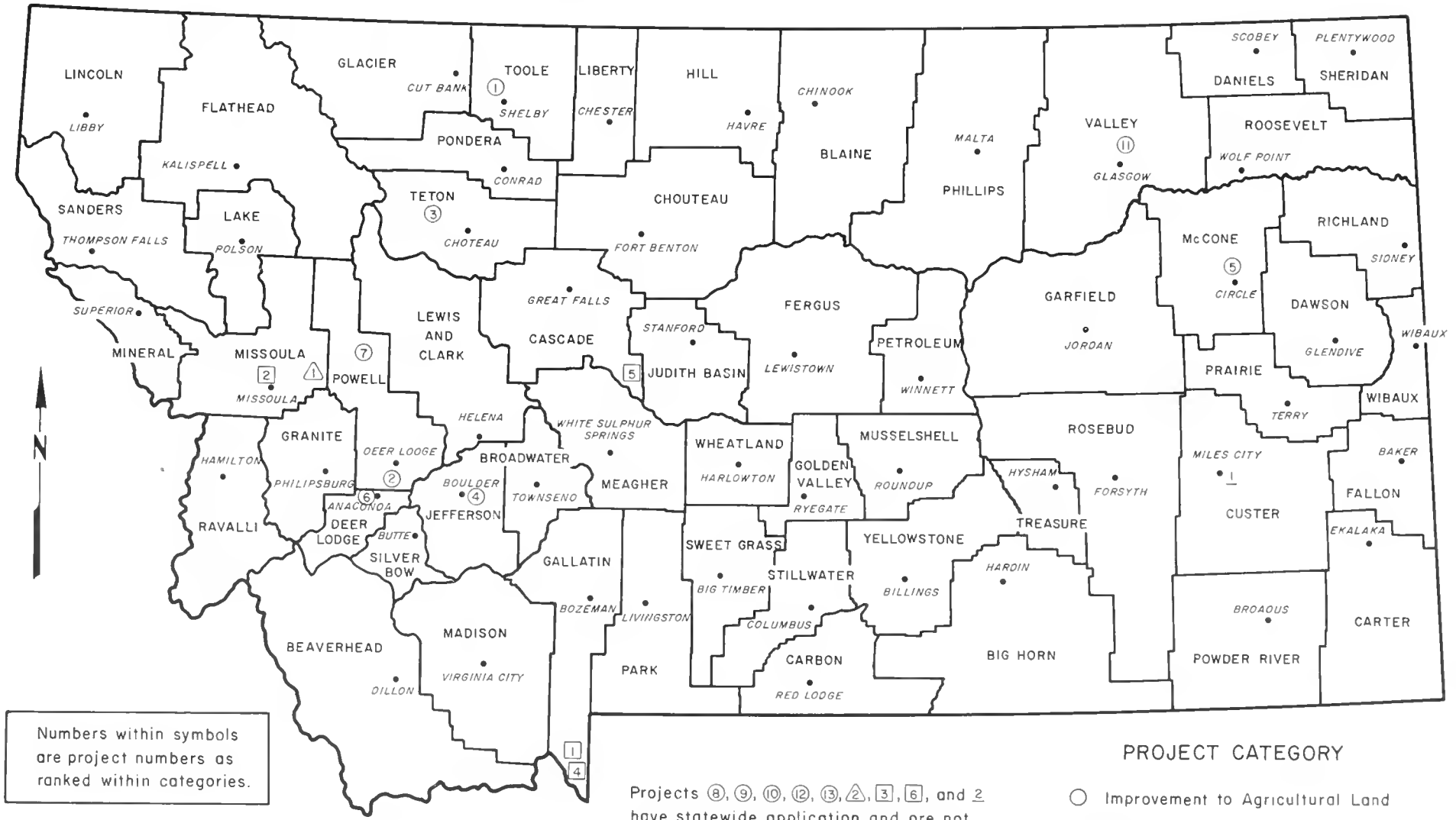
ACKNOWLEDGEMENTS

The Department of Natural Resources and Conservation would like to thank the following persons who participated in the preparation of this report: Leo Berry, Director; Gary Fritz, Administrator, Water Resources Division; Caralee Cheney, Chief, Water Development Bureau; Ann Mulroney, Loan and Grant Supervisor; Steve Schmitz, Project Development Supervisor; Chris Deveny, Project Evaluator; Neil McCaslin, Financial Specialist; Jim Brown, Engineer; Glen McDonald and Bob Clark, Engineering Bureau; Nancee Miller, who typed the report; Peggy Todd, who edited the report; and Gordon Taylor, Don Howard, and Barbara Lien, who coordinated the printing of the report.

Geographical Distribution of Projects

Renewable Resource Development Program

Non-Water Projects



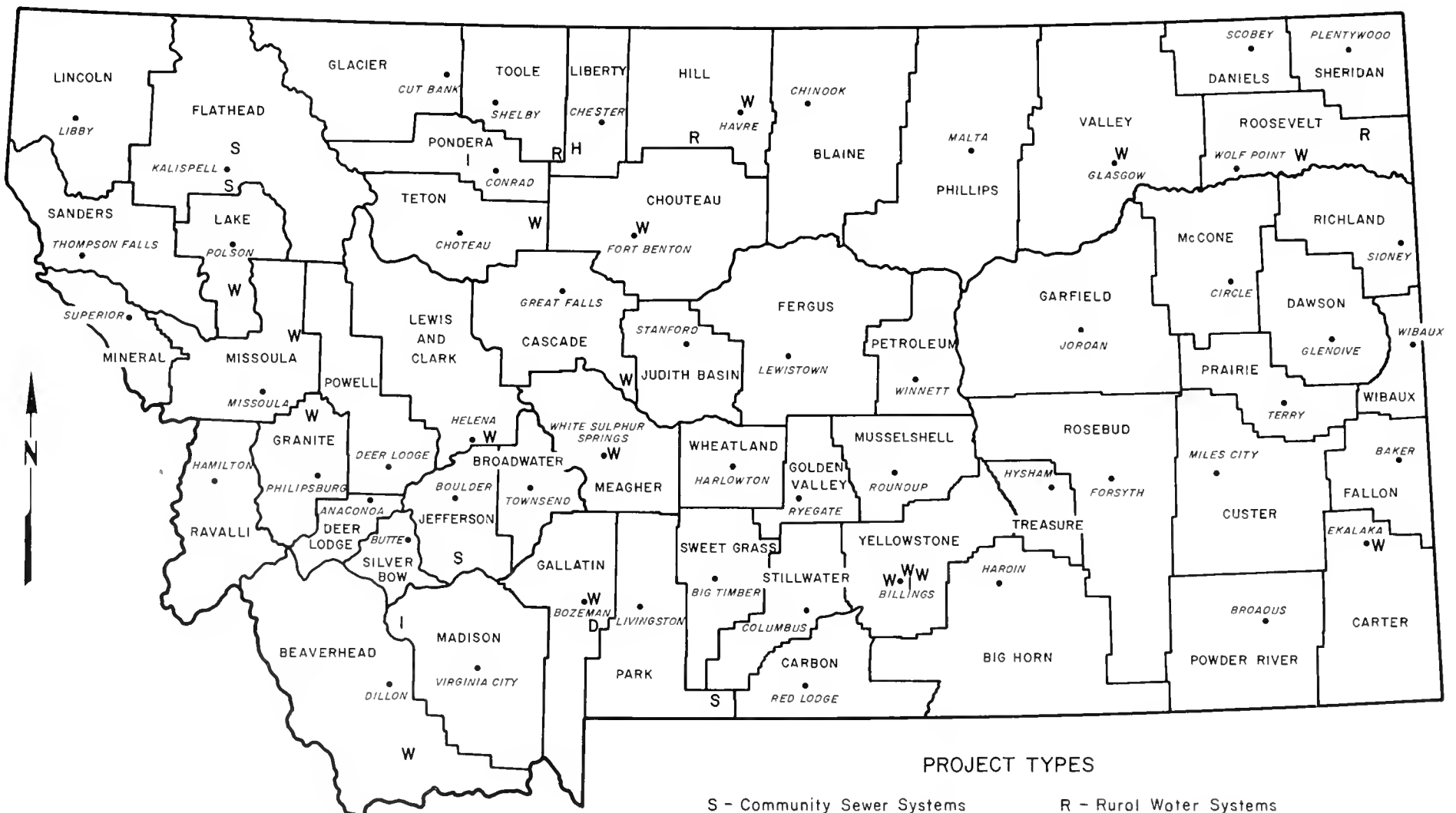
Numbers within symbols are project numbers as ranked within categories.

Projects (8), (9), (10), (12), (13), △2, [3], [6], and 2 have statewide application and are not shown at specific areas on the map.

PROJECT CATEGORY

- ○ Improvement to Agricultural Land
- □ Other
- △ Timber
- — Water Reservations

Geographical Distribution of Water Development Projects Recommended for Funding from Coal Severance Tax Bond Proceeds



PROJECT TYPES

S – Community Sewer Systems

W – Community Water Systems

I – Irrigation Systems

R – Rurol Water Systems

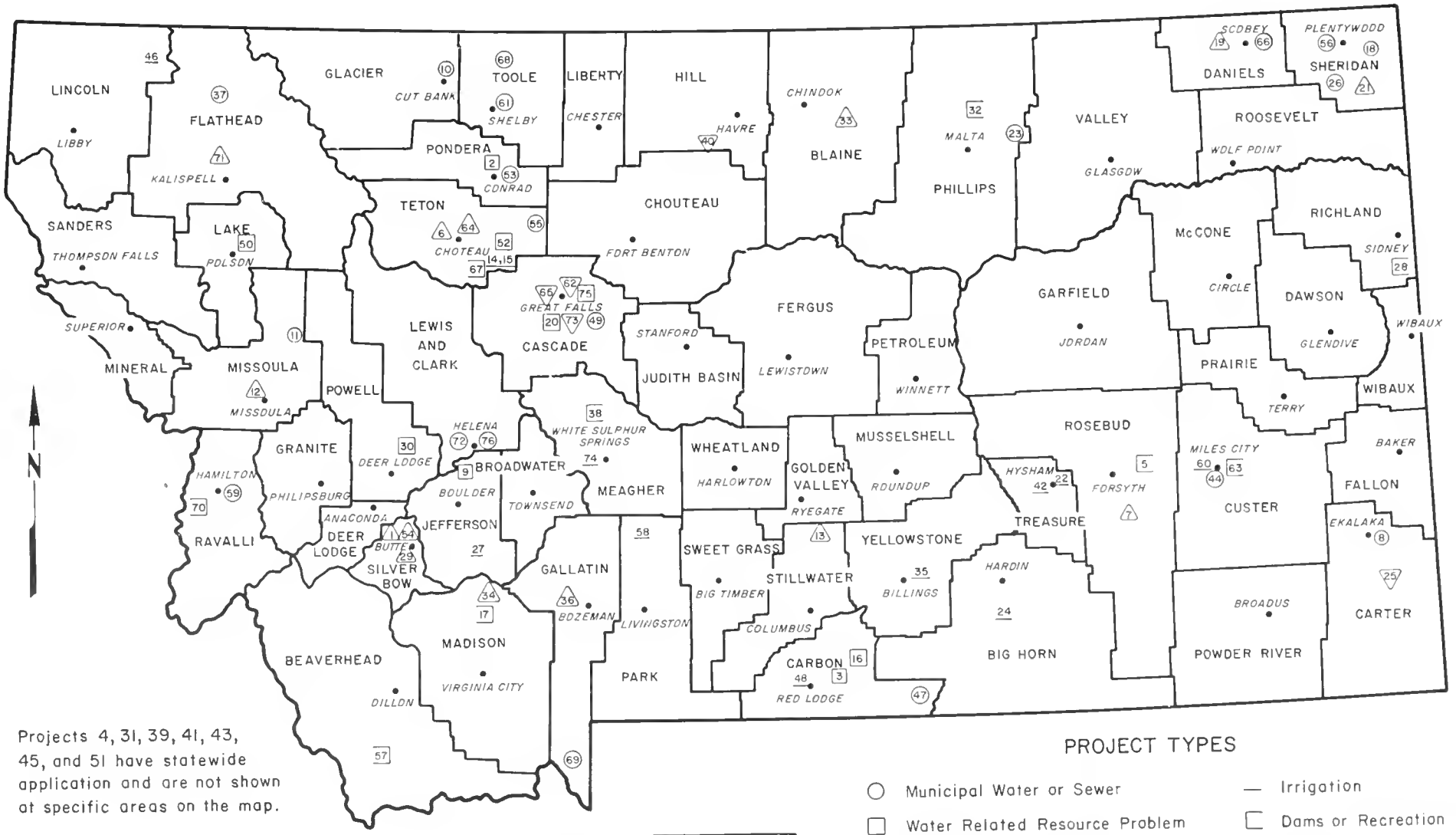
D – Dom Rehabilitation

H – Hydropower Project

Geographical Distribution of Projects

Water Development and Renewable Resource Development Programs

Water Projects



Projects 4, 31, 39, 41, 43, 45, and 51 have statewide application and are not shown at specific areas on the map.

Numbers within symbols are project numbers as ranked.

PROJECT TYPES

- ○ Municipal Water or Sewer
- □ Water Related Resource Problem
- △ Studies or Investigations
- ▽ Rural Water Systems
- — Irrigation
- ⊏ Dams or Recreation
- ⊐ Hydropower